

Networks • Communications

DECserver 200

Hardware Installation/Owner's Guide

EK-D200C-IN-001

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DECserver 200

Hardware Installation/Owner's Guide

Order No. EK-D200C-IN-001

October 1986

This guide explains how to install the DECserver 200 and how to verify its operation. The guide also describes the DECserver 200 controls and indicators. This document is intended for the hardware installer and the server manager.

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Contents

Preface

1 Introduction to the DECserver 200

1.1	DECserver 200 Models	1-1
1.2	Functions of the DECserver 200	1-2
1.2.1	DECserver 200/MC (DSRVB-Ax)	1-3
1.2.2	DECserver 200/DL (DSRVB-Bx)	1-4
1.3	Hardware Installation Overview	1-5
1.3.1	Connecting the DECserver 200 to the Ethernet Network	1-5
1.3.2	Connecting Port Devices to the DECserver 200/MC	1-8
1.3.3	Connecting Port Devices to the DECserver 200/DL	1-10
1.4	DECserver 200 Software	1-12

2 Contents of Shipment

2.1	Number of Boxes	2-1
2.2	Contents of the DECserver 200 Box	2-1
2.3	Contents of the Accessories Box(es)	2-2

3 Site Preparation

3.1	Arranging for Software Installation	3-1
3.2	Placing the DECserver 200	3-2
3.2.1	Offices	3-2
3.2.2	Rack Mount	3-2
3.2.3	Satellite Equipment Rooms (SER)	3-2
3.3	Cable Configuration Rules	3-3
3.4	Preinstallation Checks	3-5

4

DECserver 200 Installation

4.1	Introduction	4-1
4.2	Verifying the Voltage Select Switch Setting	4-1
4.3	Connecting the Transceiver Cable	4-3
4.4	Before Connecting Power	4-6
4.5	Connecting Power	4-7
4.6	Verifying Operation	4-8
4.7	Connecting Device Cables	4-9
4.7.1	Connecting Device Cables to the DECserver 200/MC	4-9
4.7.2	Connecting Device Cables to the DECserver 200/DL	4-11
4.8	Verifying System Installation	4-16

5

What To Do if You Have Problems

5.1	Introduction	5-1
5.2	Diagnosing Server Problems	5-1
5.3	D1 LED Off	5-3
5.4	D2 LED Off	5-3
5.5	D2 LED Blinking	5-4
5.5.1	Error Messages 920 and 921	5-4
5.5.2	Error Messages 922 and 923	5-5
5.5.3	Error Messages 930 and 931	5-5
5.5.4	Error Message 932	5-5
5.5.5	Error Messages 941, 942, and 950	5-6
5.5.6	No Messages on Console Terminal	5-7
5.6	D3 LED Blinking	5-8
5.6.1	Down-Line Load Starts, Then Fails	5-8
5.6.2	Down-Line Load Does Not Start	5-8

A

Controls and Indicators

A.1	Controls	A-1
A.1.1	Software Reset Switch (S1)	A-1
A.1.2	Voltage Select Switch	A-1
A.1.3	Circuit Breaker	A-2
A.2	Status Indicator LEDs	A-2

B

Port Devices Supported by DECserver 200

C

Ordering Information

C.1	DECserver 200 Hardware Units	C-1
C.2	DECserver 200 Country Kits	C-1
C.3	DECserver 200 Accessories	C-2

C.4	DEC OFFICE Cable (BC16E) and Adapters	C-3
C.5	Transceiver Cables	C-3
C.6	Device Cables	C-4

D Cable Structure

D.1	DECserver 200/MC Device Connectors (J1 through J8)	D-1
D.2	Serial Line Circuit Standards	D-2
D.3	Device Cables Used With DECserver 200/MC	D-3
D.3.1	BC22D Shielded Null Modem Cable (Data Leads Only)	D-3
D.3.2	BC22E or BC22F Shielded Straight-Through Cable (Full-Modem)..	D-4
D.3.3	BC22R Shielded Null Modem Cable	D-5
D.3.4	BC17D Shielded Null Modem Cable	D-6
D.3.5	DECserver 200/MC Port Loopback Connector	D-7
D.4	DECserver 200/DL Device Connector (J1)	D-8
D.5	Device Cables and Adapters Used With DECserver 200/DL	D-9
D.5.1	BC16C 36-Conductor Cable (Data Leads Only)	D-9
D.5.2	H3101 36-pin Loopback Connector	D-10
D.5.3	H3102 36-pin Cable Coupler	D-11
D.5.4	H3106 36-pin to 50-pin Adapter	D-12
D.5.5	H3104 Cable Concentrator	D-13
D.5.6	H3103 MMJ Loopback Connector	D-14
D.5.7	BC16E-xx 6-Conductor DEC OFFICE Cable	D-15
D.5.8	H8572 6-Pin Cable Coupler	D-16
D.5.9	H8571-xx DEC423 to RS-232-C Passive Adapters	D-17

E DECserver 200 Specifications

E.1	Power	E-1
E.2	Environment	E-1
E.2.1	Temperature	E-1
E.2.2	Altitude	E-2
E.2.3	Relative Humidity	E-2
E.2.4	Physical Size of the DECserver 200	E-2
E.2.5	Space Requirements	E-2

F Service Options

F.1	Hardware Services	F-1
F.1.1	Digital On-Site Service	F-1
F.1.2	DECmailer	F-1
F.2	Installation Service	F-1
F.3	Software Services	F-1
F.3.1	Software Product Service Agreements	F-1
F.3.2	Training	F-1

G

Connecting to Etherjack

Figures

1-1	DECserver 200 (Models DSRVB-Ax and DSRVB-Bx)	1-1
1-2	DECserver 200/MC	1-3
1-3	DECserver 200/DL	1-4
1-4	Standard Ethernet Coaxial Cable Connection	1-6
1-5	ThinWire Ethernet Coaxial Cable Connection	1-7
1-6	DECserver 200/MC Port Device Connections	1-8
1-7	DECserver 200/DL Port Device Connections	1-10
1-8	DECserver 200/DL Accessories	1-11
2-1	DECserver 200 Shipping Box Contents	2-1
4-1	DECserver 200 Hardware Verification	4-8
A-1	Controls and Indicators	A-1
D-1	Pin Numbers — DECserver 200/MC Device Connectors (J1 through J8)	D-1
D-2	Pin Assignments — BC22D Shielded Null Modem Cable	D-3
D-3	Pin Assignments — BC22E or BC22F Shielded Straight-Through Cable	D-4
D-4	Pin Assignments — BC22R Shielded Null Modem Cable	D-5
D-5	Pin Assignments — BC17D Shielded Null Modem Cable	D-6
D-6	Wiring Diagram — DECserver 200/MC Port Loopback Connector	D-7
D-7	Pin Numbers — DECserver 200/DL Device Connector (J1)	D-8
D-8	Wiring Diagram — BC16C 36-Conductor Cable	D-9
D-9	Wiring Diagram — H3101 Loopback Connector	D-10
D-10	Wiring Diagram — H3102 36-Pin Cable Coupler	D-11
D-11	Wiring Diagram — H3106 Cable Adapter	D-12
D-12	Wiring Diagram — H3104 Cable Concentrator	D-13
D-13	Wiring Diagram — H3103 MMJ Loopback Connector	D-14
D-14	Wiring Diagram — BC16E-xx Cable	D-15
D-15	Wiring Diagram — H8572 Cable Coupler	D-16
D-16	Wiring Diagram — H8571-A Adapter	D-17
D-17	Wiring Diagram — H8571-B Adapter	D-17

Tables

1-1	Device Cables	1-9
3-1	Maximum Cable Lengths	3-3
5-1	Status LEDs/Indications	5-2
A-1	Status LEDs	A-2
D-1	Circuit Standards	D-2
D-2	DECserver 200/DL Device Connector (J1) Pin Definitions	D-8
E-1	DECserver 200 Power Ratings	E-1

Preface

This guide explains how to install the DECserver 200, models DSRVB-Ax and DSRVB-Bx, and how to verify their operation. The guide also tells how to order Digital services and products that support the DECserver 200.

The only tool required for installation is a small flat-blade screwdriver.

You should keep this guide with your DECserver 200 unit.

Intended Audience

- Server Manager
- Hardware Installer

How to Use This Guide

Before you install the DECserver 200, it is recommended that you read Chapters 1, 2, and 3. These chapters provide a functional overview of the DECserver 200 and the installation process, including important site preparation information. Chapter 4 provides procedures to install and verify the DECserver 200. If problems occur during verification, refer to the troubleshooting procedures in Chapter 5. The appendixes offer additional information that can be useful during installation.

Structure of This Guide

This manual contains five chapters and seven appendixes, as follows:

- | | |
|------------------|--|
| Chapter 1 | Introduces the DECserver 200 from a functional point of view and describes the installation process and the software requirements. |
| Chapter 2 | Describes the contents of the DECserver 200 shipment and provides instructions for getting help if the equipment is damaged. |

- Chapter 3** Discusses important site preparation information that must be considered before the DECserver 200 installation begins.
- Chapter 4** Provides an illustrated step-by-step procedure for installing and verifying the operation of the DECserver 200.
- Chapter 5** Provides help in isolating problems that can occur during the installation of the DECserver 200 and provides procedures to correct them.
- Appendix A** Describes the controls and indicators on the DECserver 200.
- Appendix B** Lists the devices supported by the DECserver 200.
- Appendix C** Lists the order codes for the DECserver 200 and related hardware products.
- Appendix D** Provides device cable wiring diagrams for users who want to assemble and use their own cables.
- Appendix E** Provides DECserver 200 specifications.
- Appendix F** Describes the Digital hardware and software service options that are available for the DECserver 200.
- Appendix G** Describes how to connect the DECserver 200 transceiver cable to another transceiver cable mounted in an Etherjack junction box.

Other DECserver 200 Documents

Ordering information for the following documents is in the release notes that accompany the server software:

- *DECserver 200 Software Installation Guide*
Describes the installation of server software and the configuration of DECserver 200 on load hosts.
- *DECserver 200 Management Guide*
Describes how to set up, manage, monitor, and troubleshoot the DECserver 200.
- *DECserver 200 User's Guide*
Summarizes the DECserver 200 user's environment.
- *DECserver 200 User's Reference Card*
Provides a ready reference of the syntax for the DECserver 200 commands.
- *DECserver 200 Identification Card*
Provides space to record unique identification data for each DECserver 200.
- *Terminal Server Commands and Messages Guide*
Describes the terminal server command set and the terminal server messages.

- *LATplus/VMS Service Node Management Guide*

Discusses the management of a VAX/VMS or a MicroVMS system that is operating as a service node in a LAT network.

Associated Documents

- *DECserver 200 Technical Manual*

Describes the DECserver 200 hardware and module logic and the self-test and initialize programs.

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Introduction to the DECserver 200

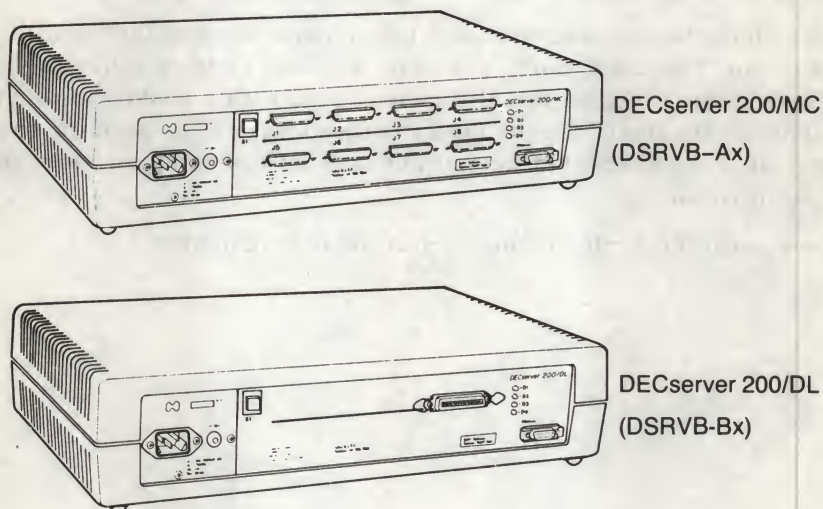
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introduced to the Executive

1.1 DECserver 200 Models

The DECserver 200 is a full-function, eight-line, Ethernet-based server that provides the interface between eight asynchronous serial data communications channels and an Ethernet or IEEE 802.3 local area network. There are two models of the DECserver 200: model DSRVB-Ax (DECserver 200/MC) and model DSRVB-Bx (DECserver 200/DL). Both models are shown in Figure 1-1.

When references are made to features that are applicable to both models, this guide refers to the model as DECserver 200.

- DECserver 200/MC (model DSRVB-Ax*) — Supports RS-232-C (EIA232) connections with full-modem control
- DECserver 200/DL (model DSRVB-Bx*) — Supports devices that require data leads only for operation



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Figure 1-1: DECserver 200 (Models DSRVB-Ax and DSRVB-Bx)

*The letter "A" or "B" replaces the "x" in the model designation to represent the following input voltage requirements:

Model	Input Voltages	Model	Input Voltages
DSRVB-AA	100—120 Vac	DSRVB-BA	100—120 Vac
DSRVB-AB	220—240 Vac	DSRVB-BB	220—240 Vac

1.2 Functions of the DECserver 200

The DECserver 200 allows any combination of eight locally attached devices access to each other and to remote computer systems on a Local Area Transport (LAT) network. Each device is logically connected to the computer systems and to their resources. For a list of devices supported by the DECserver 200, see Appendix B.

DECserver 200 offers the following features:

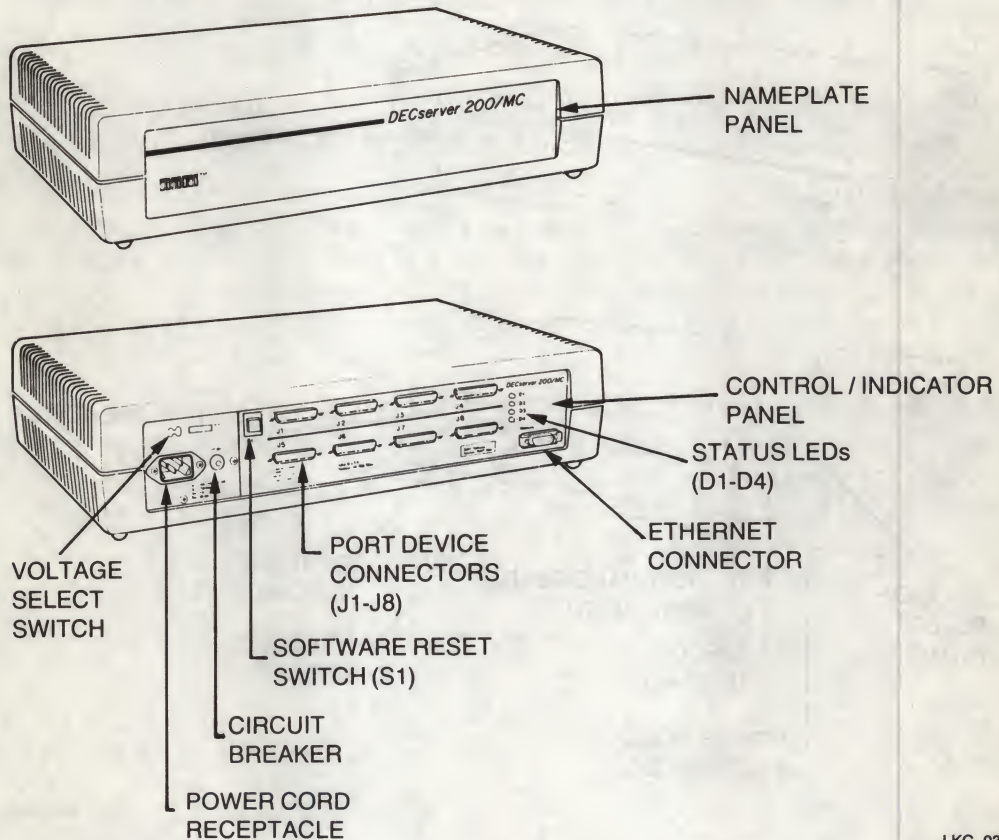
- Permits fast, easy connections between the devices attached locally to the server ports and the remote devices on the network.
- Manages device traffic and leaves computer systems more time for applications tasks (as compared to traditional character-oriented interfaces, such as the DZ11).
- Reduces and simplifies cabling required for connecting devices to a network.
- DECserver 200/MC supports dial-in and dial-out modems.
- Provides access to Digital and to non-Digital host systems on the LAT network.

You can install the DECserver 200 in a variety of environments, including offices and computer rooms. The server can be placed on a desk or table, or can be mounted in a standard rack cabinet. Digital can also provide you with a wall/partition mounting bracket to mount the server directly onto an office wall or to suspend the server from partitioned office walls. This bracket must be ordered separately. See Appendix C for ordering information.

The following sections further define the features of both models.

1.2.1 DECserver 200/MC (DSRVB-Ax)

The DECserver 200/MC, shown in Figure 1-2, supports full-duplex, asynchronous devices that are compatible with V.28/RS-232-C (EIA232) standards. These devices include terminals, printers, modems, personal computers, and host systems. This model has eight 25-pin connectors (J1 through J8) for connecting devices to each of the server's eight serial-line ports. Each device is logically connected (through the server ports) to the computer systems on the network and their resources. Devices attached to another server can also access personal computers, dial-out modems, printers, and host systems that are attached locally to the DECserver 200.



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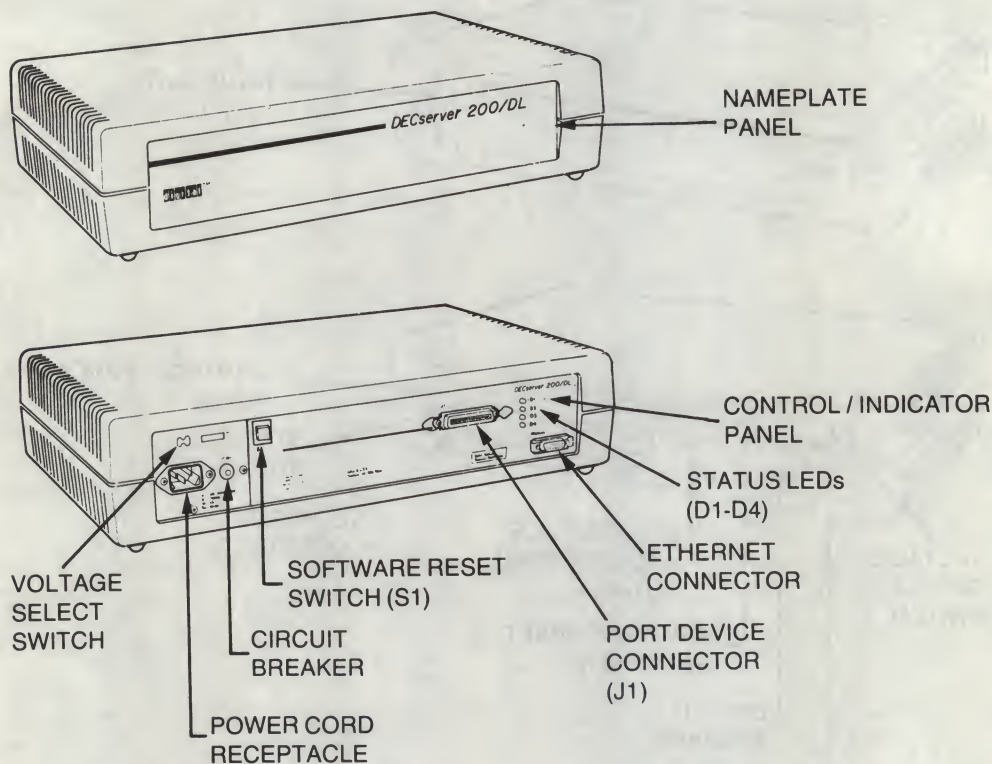
Figure 1-2: DECserver 200/MC

NOTE

For a description of DECserver 200 controls and indicators, see Appendix A in this manual.

1.2.2 DECserver 200/DL (DSRVB-Bx)

The DECserver 200/DL, shown in Figure 1-3, supports devices (asynchronous devices supporting RS423, DEC423, and CCITT-V.10 standards) such as terminals, printers, and personal computers (in terminal emulation mode) that require data leads only for operation. This model has one 36-pin connector (J1) for connecting devices to each of the server's eight serial-line ports. Only the data leads from each server port are attached to this connector. The DECserver 200/DL does not support connections to modems or host systems.



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Figure 1-3: DECserver 200/DL

NOTE

For a description of DECserver 200 controls and indicators, see Appendix A in this manual.

1.3 Hardware Installation Overview

Installing the DECserver 200 hardware consists of first connecting the server to the Ethernet network, then verifying the hardware installation. The device cables are connected to the server after the hardware installation is verified. The following sections provide an overview of the methods used to complete the connections.

NOTE

The DECserver 200 is considered operational when the server hardware is successfully installed, and the system installation verification procedure is performed on one DECserver 200 unit. The system comprises the installed DECserver 200 hardware with the DECserver 200 server software running on the hardware unit. See the appropriate DECserver 200 Software Installation Guide for details about the system verification procedure.

1.3.1 Connecting the DECserver 200 to the Ethernet Network

A transceiver cable connects the server to the Ethernet network (see Figures 1-4 and 1-5). The transceiver cable can be connected to any of the following:

- Another transceiver cable section. This cable can be secured in an Etherjack junction box.
- A DELNI Local Network Interconnect.
- A transceiver on a standard Ethernet coaxial cable for Digital baseband networks or a DECOM for Digital broadband networks.
- A ThinWire Ethernet Station Adapter (DESTA) on a ThinWire Ethernet coaxial cable (see Figure 1-5).
- A standard rack cabinet in a Satellite Equipment Room (SER) for DECconnect systems. See the *DECconnect Planning and Configuration Guide* for installing the DECserver 200 in DECconnect systems.

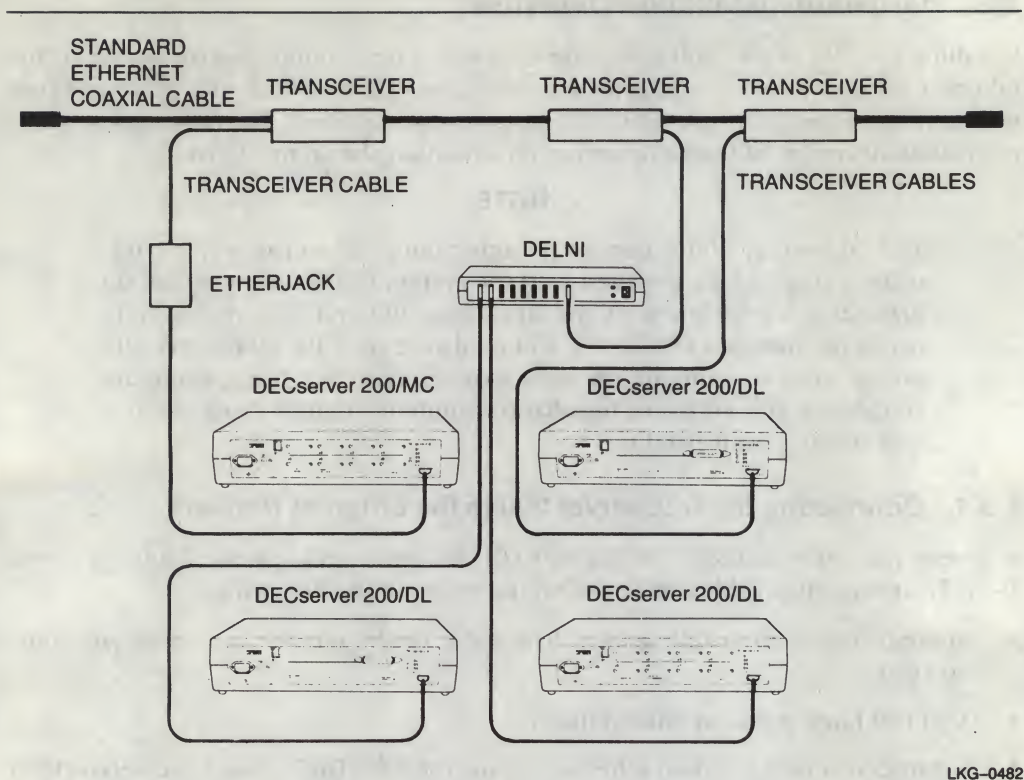
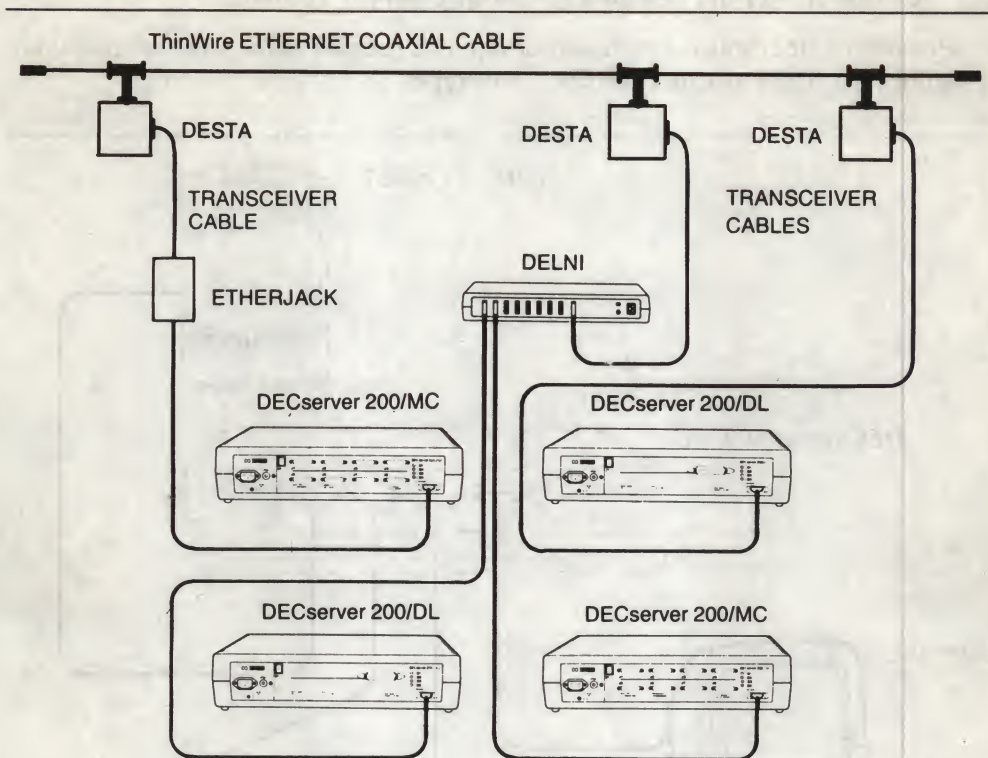


Figure 1-4: Standard Ethernet Coaxial Cable Connection

NOTE

The DECserver 200 is compatible with Digital baseband and broadband Ethernet products and with Ethernet and IEEE 802.3 specifications.



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Figure 1-5: ThinWire Ethernet Coaxial Cable Connection

The DELNI can stand alone or be connected to the Ethernet coaxial cable. If you are connecting the DELNI to the Ethernet coaxial cable or to an Etherjack junction box, allow for an additional transceiver cable.

Make sure the transceiver connection is ready before the server installation begins. This means that the Etherjack, the DELNI, the DECOM, the DESTA, or the transceiver is installed, and the required transceiver cabling is in place, tested, and tagged. See the appropriate product installation guide to install these products.

See Appendix C for a listing of all DECserver 200 hardware options and order codes.

1.3.2 Connecting Port Devices to the DECserver 200/MC

You need one device cable for each port device you connect to the DECserver 200/MC (see Figure 1-6). Table 1-1 lists available cable types.

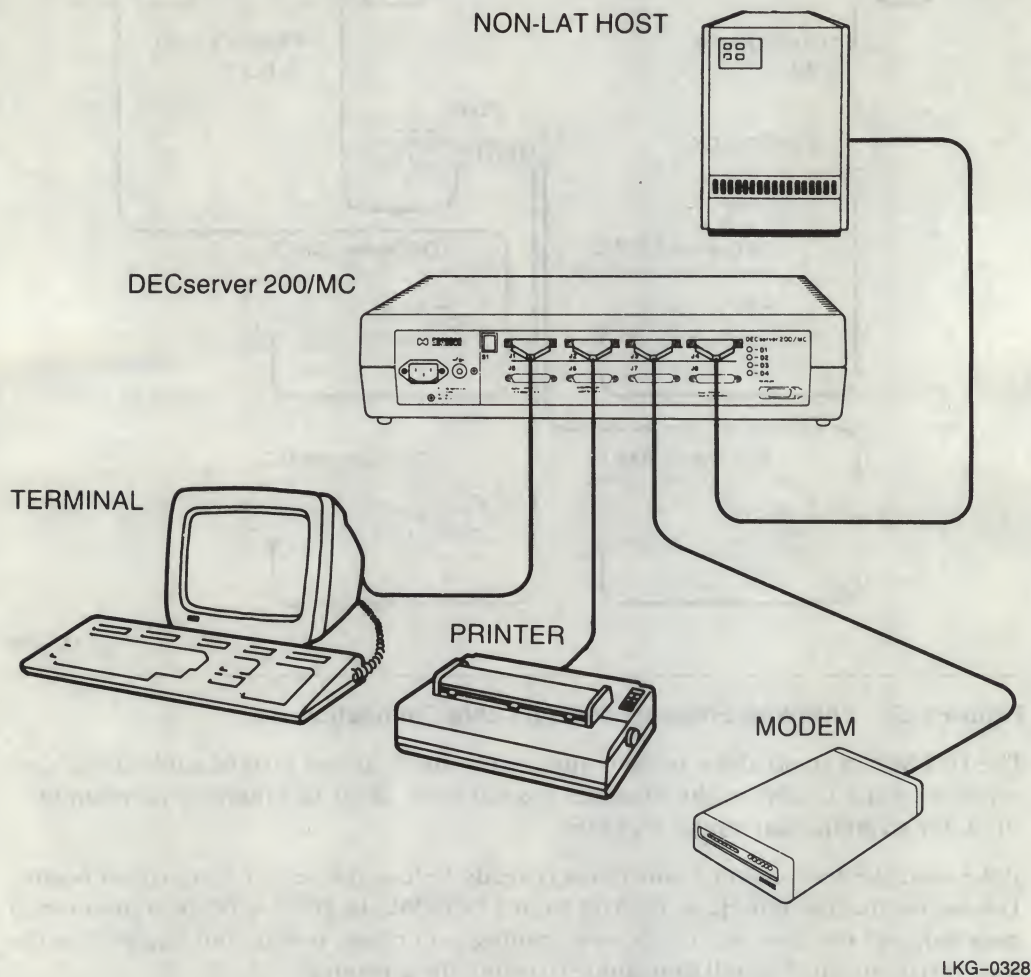


Figure 1-6: DECserver 200/MC Port Device Connections

Table 1-1: Device Cables

Cable Type	Description	For Connecting
BC22D	Null modem cable	Printers, terminals, and personal computers that are NOT utilizing modem control signals for operation
BC22R*	Null modem cable	Printers, terminals, and personal computers that ARE utilizing modem control signals for operation
BC22E or BC22F	Modem cable	Dial-in or dial-out modems

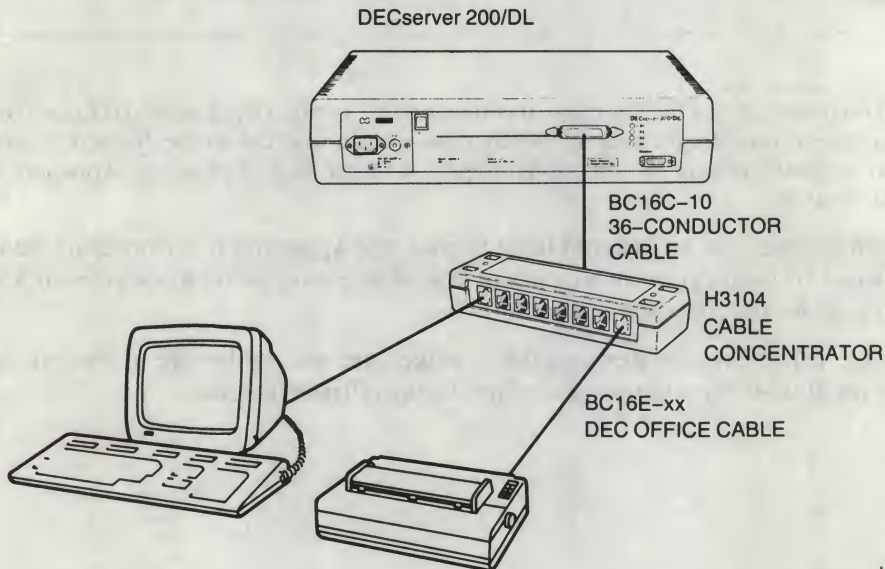
*Digital recommends the BC22R cable to connect Data Terminal Equipment (DTE) devices that use full-modem control signals for operation. However, another cable type, the BC17D, is available that supports most of the functions supported by the BC22R cable. See Appendix D for more information.

The device cables can be ordered from Digital (see Appendix C for ordering information). If you are using your own cables or assembling your own cables, refer to Appendix D for cable configuration information.

If you are using existing device cables, make sure the cables are accessible at the DECserver 200/MC installation site before the installation begins.

1.3.3 Connecting Port Devices to the DECserver 200/DL

The DECserver 200/DL provides a single 36-pin connector that contains the data leads for all eight ports. You will need an H3104-B DECserver 200/DL Adapter kit to connect port devices to the server (see Figure 1-7). This kit contains an H3104 cable concentrator, an H3103 MMJ loopback connector, and a BC16C-10 (10-foot) 36-conductor cable. The cable concentrator has eight 6-pin modified modular jacks that accept BC16E-xx DEC OFFICE cables for connecting port devices to the DECserver 200/DL. These accessories, and others shown in Figure 1-8, are available from Digital to customize your DECserver 200/DL configuration. See Appendix C for ordering information.

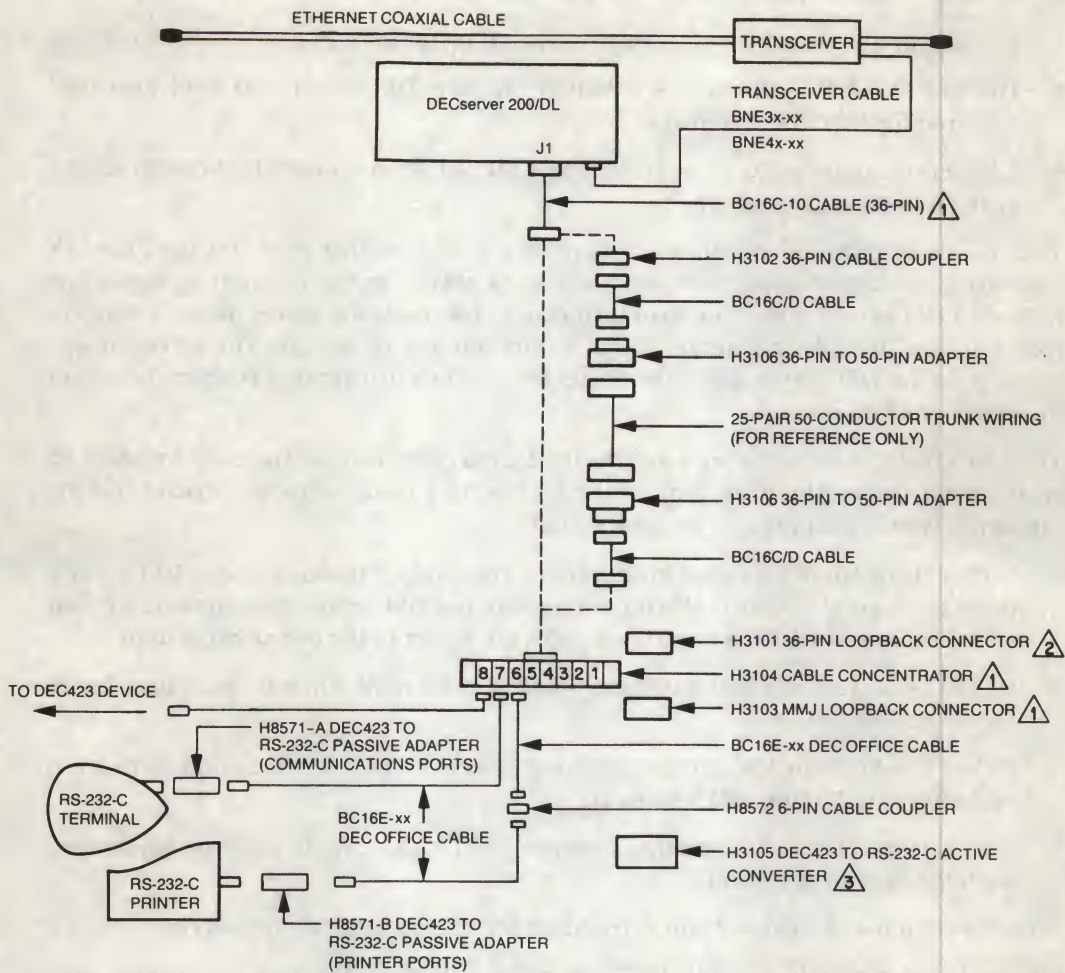


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Figure 1-7: DECserver 200/DL Port Device Connections

If you are using or assembling your own cables, refer to Appendix D for cable configuration information.

If you are using existing device cables, make sure the cables are accessible at the DECserver 200/DL installation site before the installation begins.



ALSO AVAILABLE (NOT SHOWN):

- H8240 50-FOOT SPOOL OF UNTERMINATED BC16E CABLE FOR CUSTOM WIRING APPLICATIONS.
- H8241 CRIMPING TOOL FOR ATTACHING MMJs TO UNTERMINATED BC16E CABLES.
- H8220 PACKAGE OF 50 MMJ CONNECTORS USED WITH THE H8241 CRIMPING TOOL TO TERMINATE CUSTOM CABLE LENGTHS FROM H8240 SPOOL.

① PART OF H3104-B DECserver 200/DL ADAPTER KIT.

② SHIPPED WITH EACH DECserver 200/DL UNIT.

③ DEPENDING ON THE DATA SIGNAL RATES AND CABLE LENGTH, SOME APPLICATIONS MAY REQUIRE THE USE OF THE H3105 DEC423 TO RS-232-C ACTIVE CONVERTER. SEE YOUR DIGITAL SALES REPRESENTATIVE FOR MORE INFORMATION.

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Figure 1-8: DECserver 200/DL Accessories

1.4 DECserver 200 Software

The basic software required for installing and operating the DECserver 200 follows:

- DECserver 200 distribution software — Installed on each DECserver 200 load host
- DECnet Phase IV software — Installed on each DECserver 200 load host (not required for ULTRIX systems)
- LAT service node software — Installed on all LAT service nodes that communicate with DECserver 200 devices

You must install the distribution software on a load host that runs DECnet Phase IV software. The distribution software includes a server image file that is down-line loaded to DECserver 200s. The load host down-line loads the server image whenever required, and provides the server image to any number of servers. The server image, running on the DECserver 200, constitutes the server software that enables the server to perform its functions.

The LAT service node software supports the LAT architecture and must be installed on each service node. The packaging of the LAT service node software depends on the operating system running on the service node:

- VAX/VMS or MicroVMS operating system (Versions 4.2 through 4.5) — LAT service node software (LATplus/VMS) is contained in the DECserver 200 software kit. For later versions, the LAT service node software is part of the operating system.
- ULTRIX-32/32m operating system — LAT service node software is included with the operating system.
- RSX-11M-PLUS or Micro/RSX operating system — LAT service node software is included with DECnet-RSX software.
- TOPS-10 or TOPS-20 operating system — LAT service node software is included with the operating system.

All software must be installed and verified before you can operate the server.

For more information, see the DECserver 200 Software Product Description that applies to the specific operating system.

2

Contents of Shipment

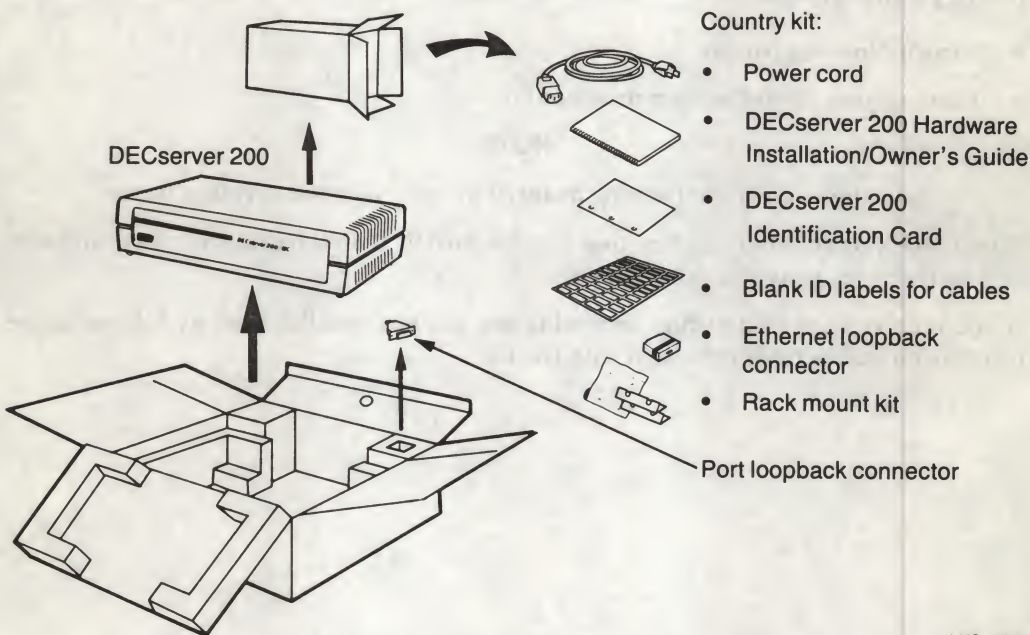
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2.1 Number of Boxes

A single DECserver 200 shipment consists of one or more boxes, depending on the optional equipment ordered. Be sure you received all your ordered equipment. Check each item for damage.

2.2 Contents of the DECserver 200 Box

Check the box, see Figure 2-1, for the following items:



LKG-0330

Figure 2-1: DECserver 200 Shipping Box Contents

IN CASE OF DAMAGE:

- Stop unpacking.
- Contact your Digital sales representative and delivery agent.

IF PARTS ARE MISSING:

- Identify missing part(s).
- Contact your Digital sales representative.

NOTE

Save the box and packing material in case you need to return the unit.

2.3 Contents of the Accessories Box(es)

The number of boxes and their contents depends on the options you ordered. Open the accessories box(es) and check the contents against the ordered items that are listed in your bill of materials.

IN CASE OF DAMAGE:

- Stop unpacking.
- Contact your Digital sales representative and delivery agent.

IF PARTS ARE MISSING:

- Identify missing part(s).
- Contact your Digital sales representative.

NOTE

Save the box(es) and packing material in case you need to return items.

If you received an Etherjack junction box kit, install it now by following the installation instructions provided with the kit.

If you received a wall/partition mounting bracket kit, install it now by following the installation instructions provided with the kit.

3

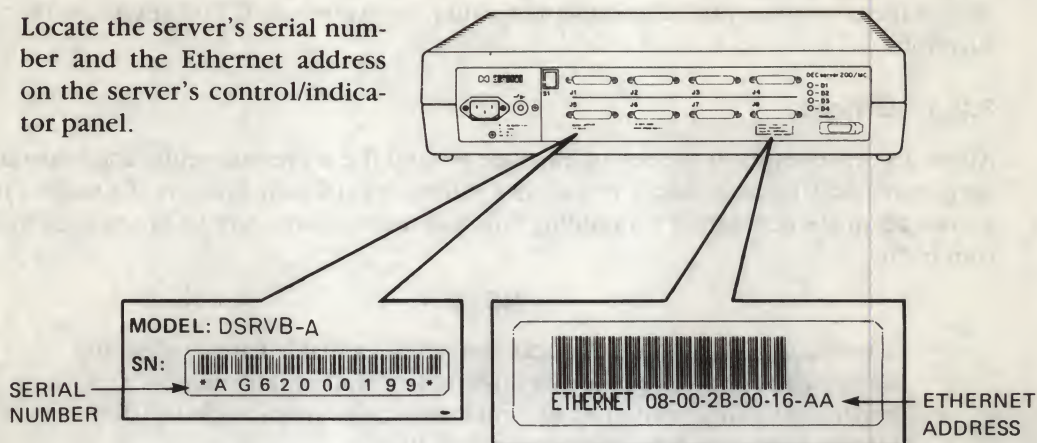
Site Preparation

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3.1 Arranging for Software Installation

- 1 Locate the server's serial number and the Ethernet address on the server's control/indicator panel.



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- 2 Locate the DECserver 200 Terminal Server Identification Card you received with the server. Copy the following information in the spaces provided on the identification card:

- a. The server's serial number
- b. The server's Ethernet address
- c. The location of the server (for example, office number, building, floor)
- d. Your name and the date of the installation

**DECserver 200
Identification Card**

The serial number and Ethernet address uniquely identify your DECserver 200 hardware unit. Please copy the information from your hardware unit onto this card. Include your name, the date of installation, and the location (for example, office number, building, floor) of the hardware unit. You should then give this card to your system/network manager at the same time as you hand over the software carton.

Serial number: A G 6 2 0 0 0 1 9 9

Ethernet address: 0 8 - 0 0 - 2 8 - 0 0 - 1 6 - A A

Location: ROOM 205

Your name: M. LENTO Date: 8 / 15 / 86

LKG-0487

- 3 Give the Identification Card and any software you received to the system/network manager (the person responsible for software installation). Ask to be notified when the distribution software is installed on the load host(s) and when the DECserver 200 is configured in the load host database, if required by the load host(s).

Continue with the procedures through Section 4.4 of this manual.

3.2 Placing the DECserver 200

The server can be placed in various locations, including offices and computer rooms, as long as the environmental requirements are met. See Appendix E, DECserver 200 Specifications.

3.2.1 Offices

Allow 15 centimeters (6 inches) of airspace around the server air vents, and place the server on a desk or table that is at least 45 centimeters (18 inches) above the floor. This allows adequate ventilation for cooling fans and reduces exposure to excess dust from foot traffic.

NOTE

A wall/partition mounting bracket kit is also available from Digital that allows you to mount the server directly to a wall or to suspend it from partitioned office walls. Installation instructions are provided with the kit (see Appendix C for ordering information).

3.2.2 Rack Mount

The server can be rack mounted in a standard rack cabinet. To install, refer to the installation instructions provided with the rack mount kit.

3.2.3 Satellite Equipment Rooms (SER)

The SER is a component of Digital's DECconnect System. It provides a central location for communications devices (such as DECserver 200s) that connect ThinWire Ethernet and twisted-pair cable to a standard Ethernet network. The SER can also be configured as the center of a stand-alone network, and provide a base from which to expand as network requirements increase. If you are installing the DECserver 200 in such an environment, or as part of a DECconnect System installation, refer to the *DECconnect System Installation and Verification Guide*.

3.3 Cable Configuration Rules

Ensure that the transceiver cables, the device cables, and the server power cable do not exceed the maximum lengths described in Table 3-1 and in the configuration rules below.

Table 3-1: Maximum Cable Lengths

From	To	Maximum Cable Length	Cable Type
Transceiver	Server	50 m (164 ft) See rules 1 and 2	BNE3X-xx* Transceiver cable
Transceiver	Server	12.5 m (41 ft) See rules 1 and 2	BNE4X-xx* Office transceiver cable
Device	Server	See rule 3	Depends on specific device (see Appendix D)
Wall outlet	Server	1.8 m (6 ft)	Server power cable (included in DSRVB-xx country kit)

Basic configuration rules:

- 1 Maximum length for the transceiver cable cannot exceed 50 meters (164 feet). This maximum length can be reduced due to the internal cabling equivalency of a device (such as a DELNI) that is connected between the server and the transceiver, or due to the use of office transceiver cable:
 - Cabling equivalency is a measure of the internal timing delay of a device, expressed in meters of transceiver cable. This cabling equivalency must be subtracted from the 50-meter maximum. For example, if a device has a 5-meter cabling equivalency, then its maximum allowable transceiver cable length is (50 m – 5 m) or 45 meters.
 - Office transceiver cable (BNE4x-xx), due to its smaller diameter, has a signal loss that is four times that of the (BNE3x-xx) transceiver cable. Therefore, if office transceiver cable is used, the maximum transceiver cable distance must be divided by 4. This means the maximum office transceiver cable length allowed is 12.5 meters*.

*BNE3x-xx transceiver cable and BNE4x-xx office transceiver cable can be interconnected. However, the cable attenuation (signal loss) for the office transceiver cable is greater than that of BNE3x-xx transceiver cable by a factor of four. For example, 2 meters, 6.6 feet, of office transceiver cable is electrically equivalent to 8 meters, 26.2 feet, of BNE3x-xx transceiver cable.

If the configuration includes a device and the device has any internal cabling equivalency, this should be subtracted from the 50-meter maximum before dividing by 4. For example, if a device has a 10-meter cabling equivalency and is attached to its transceiver using office transceiver cable, then the maximum allowable transceiver length is $(50 \text{ m} - 10 \text{ m})/4$ or 10 meters.

- 2 When connecting the server to a configuration that includes a DELNI, allow 5-meters cabling equivalency loss for the DELNI.
- 3 Maximum allowable lengths for device cables should not exceed guidelines set by RS-232-C (EIA232) specifications.

3.4 Preinstallation Checks

Before beginning the server installation, use the following checklists to ensure that site preparation is complete:

Hardware

- ☐ The appropriate baseband or broadband network interface (for example, an Etherjack junction box, a DELNI, a DECOM, a DESTA, or Ethernet transceiver) is installed, and the required transceiver cabling is in place, tested, and tagged. If the device is not installed, ensure that arrangements for the installation are made before the server installation begins.
- ☐ The arrangements were made to connect the server's transceiver cable to the appropriate baseband or broadband network interface.
- ☐ The wall/partition mounting bracket kit or rack mount kit is installed (if required) as described in the kit documentation.
- ☐ The transceiver cables are available in the appropriate lengths.
- ☐ The device cables are available in the appropriate lengths or existing device cables you plan to use are available at the server installation site.
- ☐ If you are installing a DECserver 200/DL, be sure that any additional accessories required to support your configuration are available at the server installation site.
- ☐ The devices (terminals, printers, personal computers, modems, hosts) are ready to be connected.
- ☐ At least one device with a keyboard (such as a terminal or a personal computer in terminal emulation mode) is available for installation troubleshooting, if necessary, and for system installation verification (as described in the appropriate DECserver 200 Software Installation Guide).

Software

- ☐ The DECserver 200 Identification Card was filled out (as described in Section 3.1) and given to the system/network manager.
- ☐ The system/network manager installed or will install the distribution software on the load host(s).
- ☐ DECnet (Phase IV) is installed and running on the load host(s). (This does not apply to ULTRIX load hosts.)
- ☐ The system/network manager installed or will install the LAT service node software (if required).

Suitable Environment

The items listed in this checklist must conform to the specifications described in Appendix E of this guide.

- ☐ The power outlet matches the power requirements of the server you ordered and is within 1.8 meters (6 feet) of the installation site.
- ☐ The temperature, altitude, and humidity ranges are correct.
- ☐ The space is adequate for ventilation and for maintenance access.
- ☐ The location is at least 45 centimeters (18 inches) above the floor surface.

Service

- ☐ The service contracts (optional) are in place. See Appendix F for more information on service options.

4

DECserver 200 Installation

DEC 20 1960

4.1 Introduction

This chapter explains how to install, power up, and verify the operation of the DECserver 200. Before you begin these procedures, read and follow the instructions in Chapter 3, Site Preparation. During this installation procedure, complete the instructions in each section before going on to the next section.

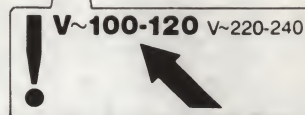
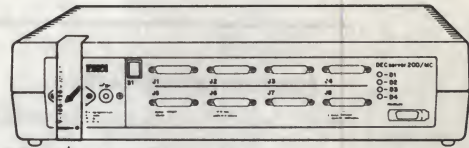
IMPORTANT

To avoid damage to the equipment, DO NOT connect the server power cord until instructed in the following procedures.

4.2 Verifying the Voltage Select Switch Setting

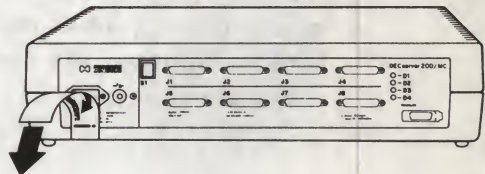
- 1 Locate the removable voltage label on the server's control/indicator panel.

Note the operating range indicated by the arrow on the label. This is the factory-set operating range of the server.



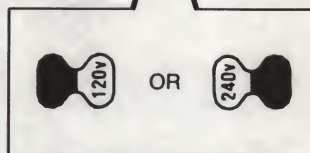
LKG-0333

- 2 Peel the voltage label from the server, exposing the voltage select switch.



LKG-0334

- 3 Verify that the voltage select switch is set to the operating range indicated by the label, and that this is the correct setting for your power source. (See your electrician if you are not sure.)



LKG-0335

- 4 If the voltage setting is not correct for your power source, set the voltage select switch to match the power source voltage.

IMPORTANT

An incorrect voltage setting can damage the server.

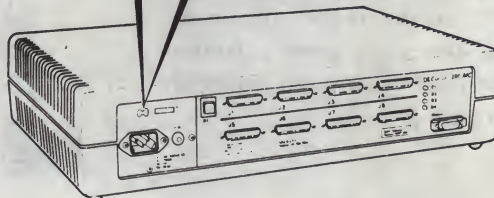
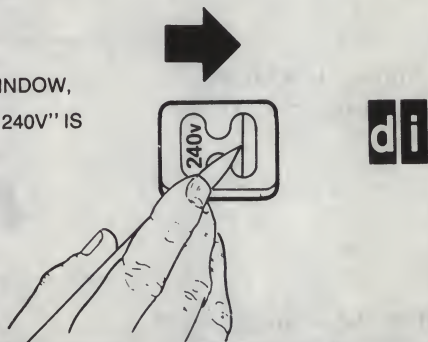
FOR 100/120V OPERATION:

IF "240V" IS VISIBLE IN THE WINDOW,
SLIDE THE SWITCH SO THAT "120V" IS
VISIBLE IN THE WINDOW.



FOR 220/240V OPERATION:

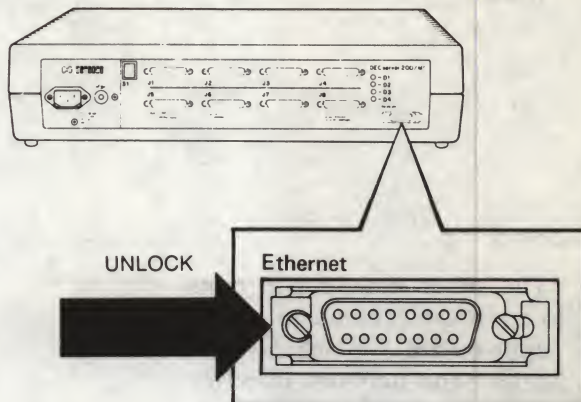
IF "120V" IS VISIBLE IN THE WINDOW,
SLIDE THE SWITCH SO THAT "240V" IS
VISIBLE IN THE WINDOW.



LKG-0336

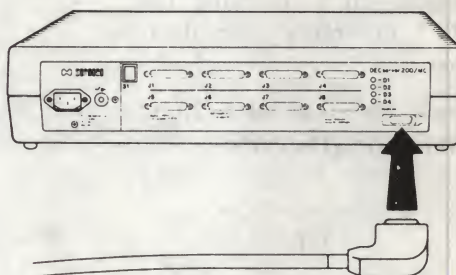
4.3 Connecting the Transceiver Cable

- 1 Unlock the slide latch on the server's Ethernet connector.



LKG-0337

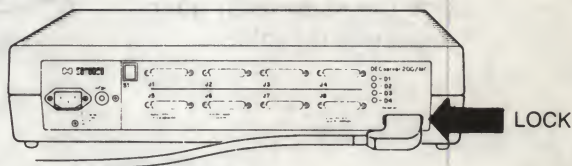
- 2 Connect the transceiver cable to the server's Ethernet connector. The cable can have a straight or a right-angle end connector.



LKG-0343

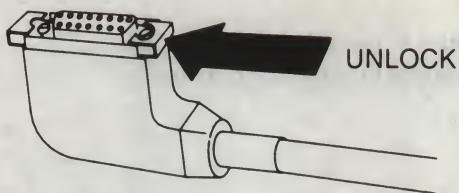
- 3 Lock the slide latch on the Ethernet connector.

Tug gently on the cable to ensure it is securely connected.



LKG-0339

-
- 4 Unlock the slide latch at the other end of the transceiver cable.

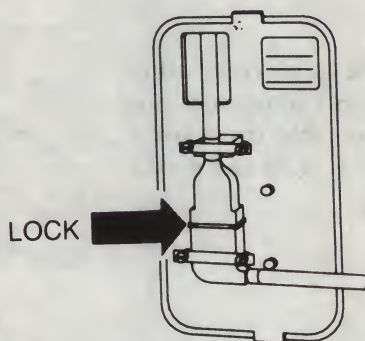


TW392

-
- 5 The other end of the transceiver cable connects to the appropriate baseband or broadband network interface. The connection is to one of the following:

- Another transceiver cable in an Etherjack junction box. See Appendix G for details on connecting to the Etherjack junction box.

Lock the slide latch after connecting the cable.

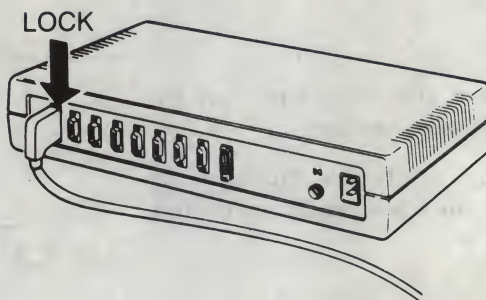


OR

TW379

-
- A cable port on a DELNI local network interconnect (as shown), or to a DECOM.

Lock the slide latch after connecting the cable.



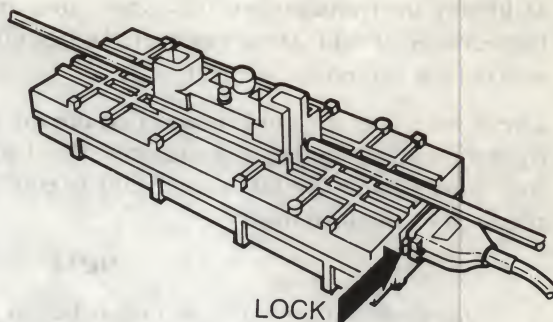
OR

TW380

- The cable port on an Ethernet Transceiver.

Lock the slide latch after connecting the cable.

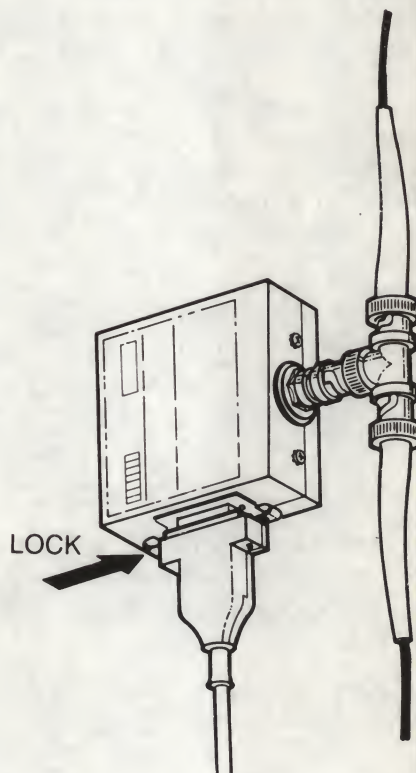
OR



LKG-0478

- The cable port on a DESTA ThinWire Ethernet station adapter.

Lock the slide latch after connecting the cable.



LKG-0480

4.4 Before Connecting Power

- 1 Make sure the transceiver cable connections are secure at both ends of the cable. If the transceiver cable is not connected when you plug in the power cord, the server will fail the diagnostic self-test.
- 2 Check with your system manager that the software installation and the server configuration are complete. For example, the distribution software is installed on the load host(s), and the DECserver 200 is configured in the load host database, if required by the load host(s).

NOTE

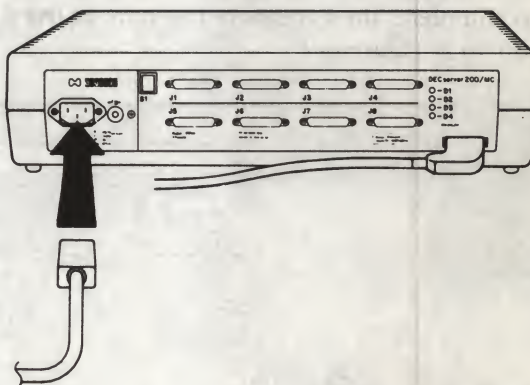
If the distribution software installation is not complete, the load host cannot send the server image to the server. The server does not operate without software. Wait for notification that the software installation is completed.

4.5 Connecting Power

The server does not have a power ON/OFF switch. Plugging in the server power cord applies power directly to the server, illuminates the D1 Status LED, starts the server self-test, and allows the server image to be down-line loaded from a load host. The server self-test will fail if the transceiver cable is not connected.

To connect the server power cord, proceed as follows:

- 1 Plug one end of the power cord into the server receptacle.



LKG-0344

- 2 Plug the other end of the power cord into the wall outlet.



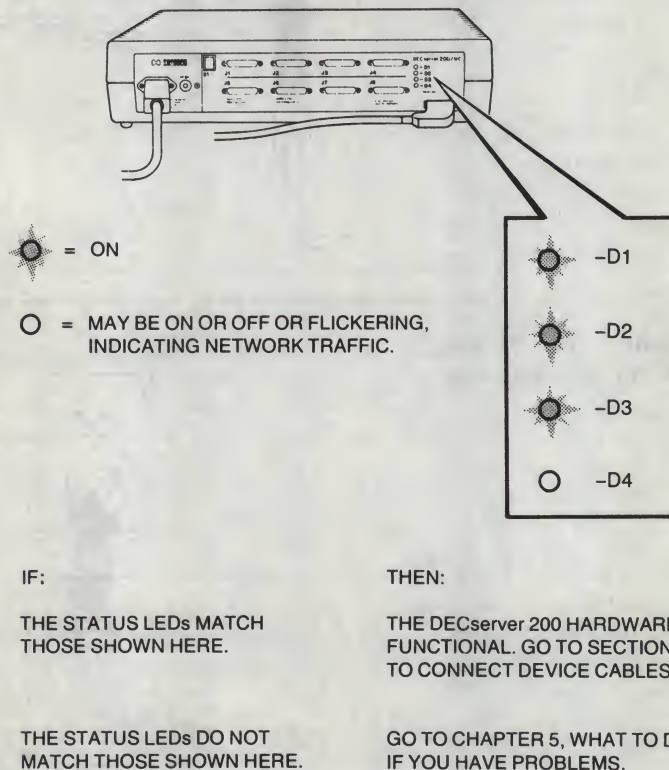
TW387

4.6 Verifying Operation

Proper operation of the server is verified by the status of the four Light Emitting Diodes (LEDs) on the server's control/indicator panel.

Whenever power is applied to the unit, the server performs a diagnostic self-test and initiates a request for a down-line load of the server image from a load host. The server self-test normally takes about 20 seconds to complete, but the down-line loading of the server image could take longer if the network is busy.

Allow up to 2 minutes for the server self-test and down-line loading of the server image to complete, then compare the state of the four status LEDs on the server with those shown in Figure 4-1:



LKG-0345

Figure 4-1: DECserver 200 Hardware Verification

NOTE

For definitions of the status LEDs on the server, see Appendix A.

4.7 Connecting Device Cables

Before connecting the device cables to the server, contact the server manager to determine if certain devices were designated to specific ports on the server. Make a list that identifies the server, and the server port location for each device you connect to the server.

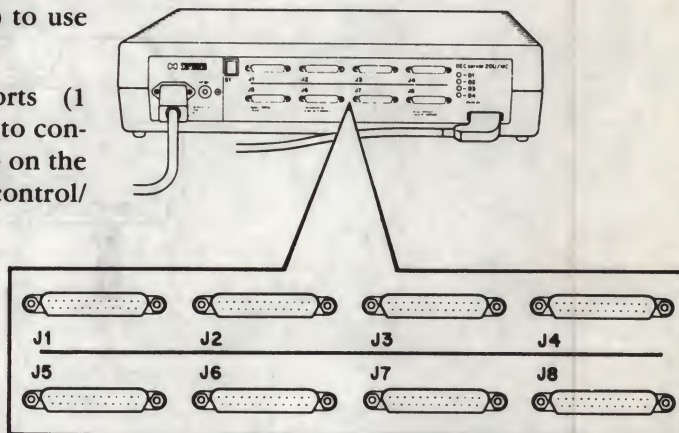
If you are connecting device cables to a DECserver 200/MC, go to Section 4.7.1.

If you are connecting device cables to a DECserver 200/DL, go to Section 4.7.2.

4.7.1 Connecting Device Cables to the DECserver 200/MC

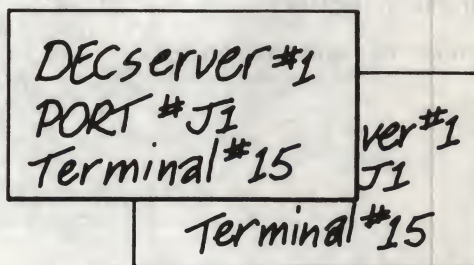
- 1 Determine which server connector (J1 through J8) to use for each device.

Note that server ports (1 through 8) correspond to connectors (J1 through J8) on the DECserver 200/MC control/indicator panel.



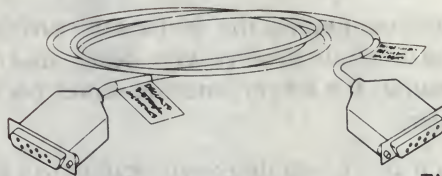
LKG-0346

- 2 Make two labels for each cable, marking each label with source and destination information similar to the sample label shown.



LKG-0479

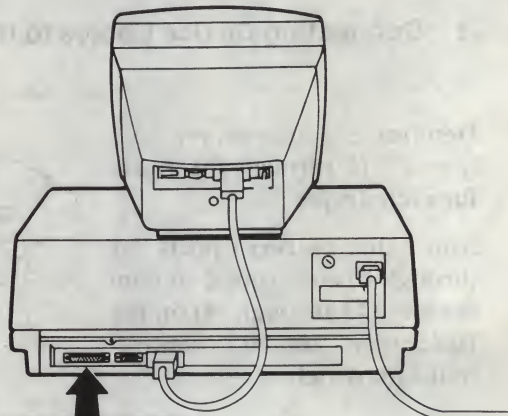
-
- 3** Attach one label at both ends of each device cable.



TW384

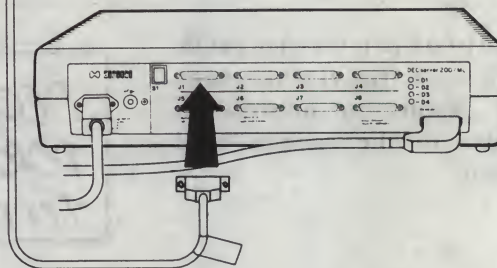
-
- 4** Connect one end of the cable to the appropriate device, as marked on the label.

Tighten the connector screws.



-
- 5** Connect the other end of the cable to the server connector marked on the label.

Tighten the connector screws.



LKG-0348

Install all other device cables in the same way. The number of cables you install depends on the number of devices you connect to the server.

After installing the device cables to all of your DECserver 200 units, go to Section 4.8.

4.7.2 Connecting Device Cables to the DECserver 200/DL

Before beginning this procedure, refer to Figure 1-8 to ensure you have all of the DECserver 200/DL accessories required for connecting device cables to your DECserver 200/DL configuration. Note that some devices require H8571-x adapters for converting 25-pin and 9-pin D-connectors to Modified Modular Jacks (MMJs). These connectors are common to most RS-232-C devices, such as terminals, personal computers and printers.

To connect the device cables to the DECserver 200/DL, proceed as follows:

- 1 Locate (if required) the H8571-x DEC423 to RS-232-C passive adapters in one of the accessories boxes you received with your unit:

- H8571-A — Used with 25-pin D-connectors found on most terminals, printers, and personal computers.



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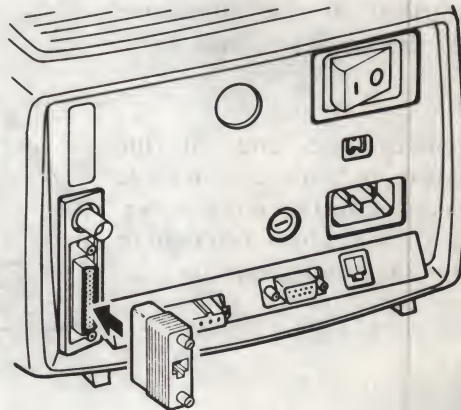
- H8571-B — Used with 9-pin D-connectors found on some printers and on RS-232-C devices.



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- 2 Connect the H8571-A adapters (if required) to the communications port of all devices that use a 25-pin device connector.

Connect the H8571-B adapters (if required) to the port of all devices that use a 9-pin device connector.

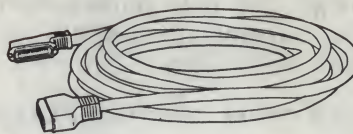


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-
- 3 Locate the H3104-B DECserver 200/DL adapter kit in one of the accessories boxes you received with your unit.

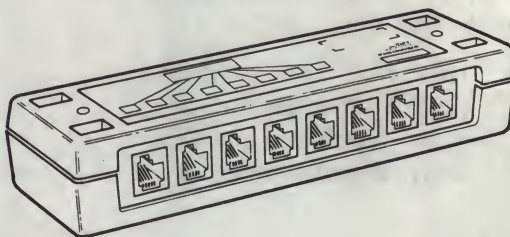
Be sure the kit contains the following items:

- BC16C-10 36-conductor cable



LKG-0491

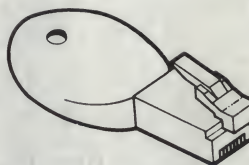
- H3104 Cable Concentrator



LKG-0492

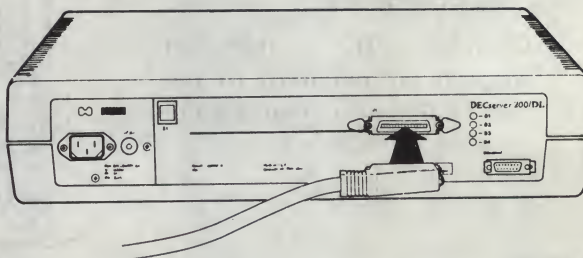
- H3103 MMJ Loopback Connector

The H3103 MMJ loopback connector is not used during the DECserver 200 installation. Save it in case you need to troubleshoot the server as described in the *DECserver 200 Management Guide*.



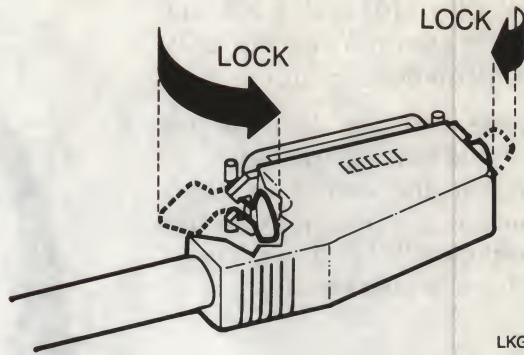
LKG-0493

-
- 4 Connect one end of the BC16C-10 36-conductor cable to connector J1, on the server. The cable can have a straight or right-angle end connector.



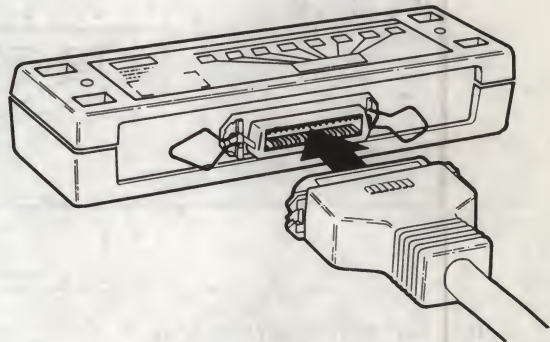
LKG-0494

- 5 Lock the cable plug to connector J1 using the spring latches provided on the J1 connector.



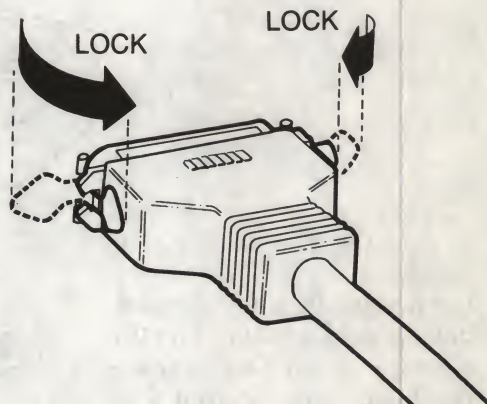
LKG-0495

- 6 Connect the other end of the BC16C-10 36-conductor cable to connector J1, on the H3104 cable concentrator.



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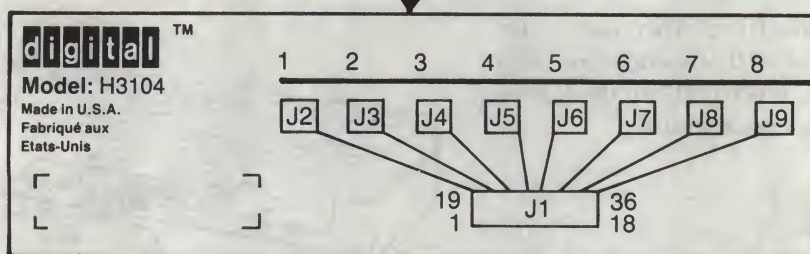
- 7 Lock the cable plug to connector J1 with the spring latches provided on the J1 connector.



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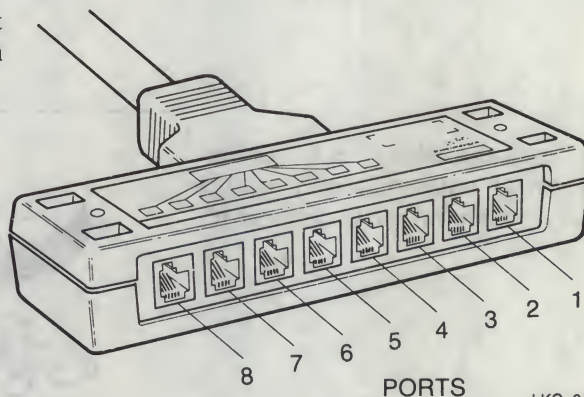
- 8 Set the H3104 cable concentrator in place (on a desk or table) with the decal facing up.

Note that the decal on the H3104 cable concentrator represents the server port assignments (1 through 8) for the eight MMJ's (J2 through J9) of the cable concentrator.



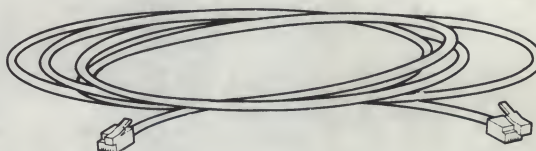
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- 9 Determine which server port (1 through 8) to use for each device.



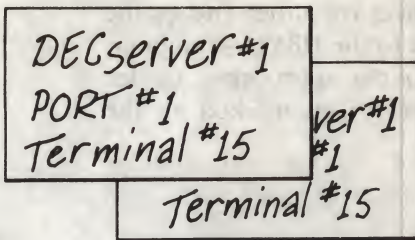
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- 10 Locate the BC16E-xx 6-conductor cables (DEC OFFICE cables) in one of the accessories boxes you received with your unit.



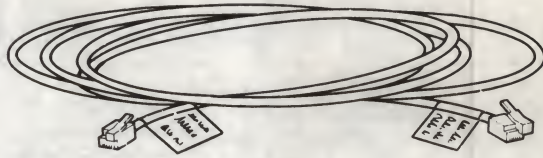
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-
- 11** Make two labels for each cable, marking each label with source and destination information similar to the sample label shown.



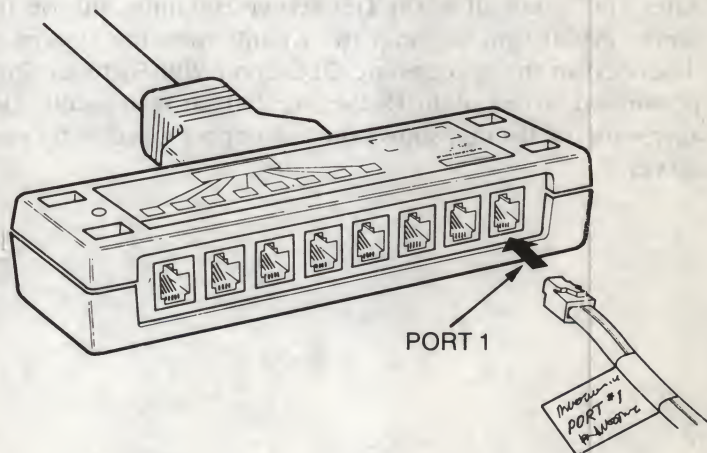
LKG-0501

-
- 12** Attach one label at both ends of each BC16E-xx cable.



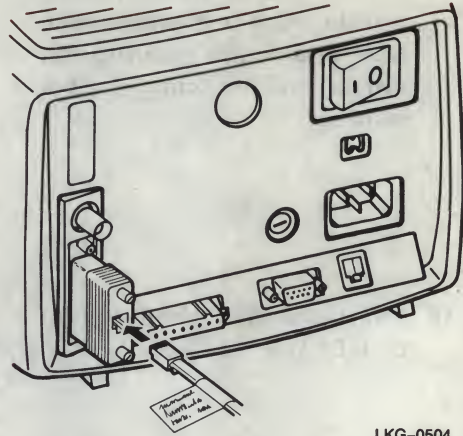
LKG-0502

-
- 13** Connect one end of the cable to the cable concentrator MMJ that corresponds to the server port marked on the label.



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-
- 14 Connect the other end of the cable to the H8571-x adapter, or to the appropriate device connector, as marked on the label.



LKG-0504

Install all other device cables in the same way. The number of cables you install depends on the number of devices you connect to the server.

After installing the device cables to all of your DECserver 200 units, go to Section 4.8.

4.8 Verifying System Installation

After you install all of the DECserver 200 units, inform the server manager that the server installation is complete. At this time the system installation verification (as described in the appropriate DECserver 200 Software Installation Guide) should be performed on one of the DECserver 200 hardware units. Also, provide the server manager with the list that shows the server port location for each device connected to the server.

5

What to Do If You Have Problems

2

What to Do if You Have Problems

5.1 Introduction

This chapter helps you identify and correct problems that can be encountered during the initial installation of the DECserver 200. The troubleshooting procedures are for diagnosing and correcting hardware related problems only.

After diagnosing and correcting the problem, return to Section 4.6 to verify the correct operation of the server, then continue with the installation.

NOTE

Notify the server manager if the troubleshooting procedures indicate the problem is software related or if the procedures do not correct the problem. Additional troubleshooting information is provided in the *DECserver 200 Management Guide*.

5.2 Diagnosing Server Problems

The four status LEDs, located on the server's control/indicator panel, indicate the status of the server and are also used for diagnosing server problems. Compare the state of the status LEDs on the server with those shown in Table 5-1 and go to the section indicated.

NOTE

All four status LEDs illuminate for 1 second (lamp check) whenever you power up the server from a power-off state. After powering up the server, allow up to 2 minutes to elapse before determining the state of the status LEDs.

Table 5-1: Status LEDs/Indications

LED Name	LED Definition	State	Indication	Corrective Action
D1	Power ON/OFF	ON	The server's dc voltages are correct	—
		OFF	The server's dc voltages are NOT correct	Go to Section 5.3
D2	Diagnostic	ON	Self-test passed	—
		OFF	Fatal error if LED remains OFF within 2 minutes after power-up	Go to Section 5.4
		Blinking	Nonfatal error	Go to Section 5.5
D3	Software	ON	Server image successfully loaded	—
		OFF	Down-line load in progress	—
		Blinking	Multiple-load failure	Go to Section 5.6
D4	Network activity	ON*	Indicates activity on the network	—

*Can be ON or OFF or flickering, depending on the amount of traffic on the network.

5.3 D1 LED Off

Problem Power is not reaching the DECserver 200.

Correction Ensure that the voltage select switch is set to the correct voltage for your country. Section 4.2 in this guide provides information about changing the voltage setting, if necessary.

Correction Secure the power cable at the server and at the wall outlet.

Correction Check the wall outlet using another appliance or light, or plug the server power cord into another outlet. If no power is available, check the wall outlet's circuit breaker.

Correction Determine if the server circuit breaker has tripped (refer to Appendix A). If it has, press in on the white button to reset the breaker. If the circuit breaker trips more than once, notify the server manager that the server must be returned to Digital for repair or replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

Correction Replace a defective server power cable with a new cable.

Problem The DECserver 200 is defective.

Correction Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.4 D2 LED Off

Problem A hardware error occurred that makes the DECserver 200 nonoperational.

Correction There is no corrective procedure for this problem. Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.5 D2 LED Blinking

If the D2 LED is blinking after power-up, it indicates the server has a nonfatal problem detected during self-test. To isolate the problem, connect a console terminal to port 1 of the server. The primary problem indicator in this case is the error message that appears on the console terminal.

To isolate and diagnose the problem, do the following:

- 1 Connect a console terminal to port 1 of the server, then power up the terminal.
- 2 Configure the terminal to operate with a speed of 9600 bits per second and with a character size of 8 bits with no parity. (Refer to the specific terminal user's guide if you need help setting up the terminal parameters.)
- 3 Unplug the server power cord at the wall outlet, then reinsert it.
- 4 Read the error message that appears on the terminal display. (If no message appears on the terminal display, refer to Section 5.5.6.)

The following sections list the error messages that occur in conjunction with the D2 LED blinking. Locate the section that describes the displayed error message and follow the recommended corrective actions.

5.5.1 Error Messages 920 and 921

Local -920- Parameter checksum error on port *n*

Local -921- Factory-set parameters applied to port *n*

Problem These messages indicate a port checksum error. The permanent characteristics for the indicated port do not pass the internal checksum test. The factory-set defaults are in effect.

Correction Reset the server characteristics using the software reset switch (S1), located on the server's control/indicator panel (see Figure A-1). Press and hold this switch in while you unplug and then reinsert the server power cord. This action causes the factory-set defaults for port characteristics to be reloaded into the server's permanent database. If this action fails to correct the problem, the server's nonvolatile memory used to store the characteristics is faulty. Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.5.2 Error Messages 922 and 923

Local -922- Port hardware error on port *n*

Local -923- Port *n* has been disabled

Problem These messages indicate a port hardware error.

Correction There is no corrective procedure for this condition. Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.5.3 Error Messages 930 and 931

Local -930- Server parameters checksum error

Local -931- Factory-set server parameters applied

Problem The server characteristics in the server's permanent database are not operational. The factory-set defaults are now in effect.

Correction Reset the server characteristics using the software reset switch (S1), located on the server's control/indicator panel (see Figure A-1). Press and hold this switch while you unplug and then reinsert the server power cord. If this action fails to correct the problem, the memory used to store the characteristics is faulty. Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.5.4 Error Message 932

Local -932- Hardware revision level checksum error

Problem The server's nonvolatile memory is faulty.

Correction There is no correction for this problem. Any performance enhancements based on hardware revisions are not operational. Notify the server manager that the server must be returned to Digital for repair or for replacement. (Refer to the *DECserver 200 Management Guide* for information about returning the unit to Digital.)

5.5.5 Error Messages 941, 942, and 950

Local -941- Transceiver loopback error

Local -942- Image load not attempted

Local -950- Troubleshooting procedures should be followed

Problem There is a fault in the transceiver cabling between the server and the coaxial cable.

Correction First, check the transceiver cable that runs from the server to the transceiver, to the DELNI, or to the Etherjack. Ensure the connection is secure at both ends of the cable. Check the cable for any signs of damage. If the cable appears damaged, replace it.

Correction If the above actions do not correct the problem, use the Ethernet loopback connector (order code 12-22196-01) you received with the DECserver 200 shipment, and do the following:

- 1 Disconnect the transceiver cable from the server.
- 2 Plug the Ethernet loopback connector into the Ethernet connector on the server.
- 3 Initialize the server by pressing **CTRL/P** on your console terminal, or by unplugging the server power cord from the wall outlet and then reinserting it.
- 4 Wait 20 seconds for the diagnostic test to complete, then observe the status of the D2 LED:
 - a. If the D2 LED continues to blink and the error messages reappear after the self-test (within 10 or 15 seconds), the server is faulty and must be returned to Digital for repair or for replacement. Notify the server manager.
 - b. If the D2 LED glows steadily, go to step 5 to isolate and to determine the faulty unit.

NOTE

When using the Ethernet loopback connector to troubleshoot the DECserver 200, if the results cause the D2 LED to glow steadily, the server attempts to down-line load the server image. Since the server is disconnected from the network, the down-line load fails and the server responds by causing the D3 LED to blink and issues messages 902 and 912 to the console terminal.

- 5 Unplug the Ethernet loopback connector from the Ethernet connector on the server.
- 6 Reconnect the transceiver cable to the Ethernet connector on the server.
- 7 Disconnect the other end of the transceiver cable from the DELNI, from the Etherjack, or from the transceiver on the Ethernet coaxial cable.
- 8 Plug the Ethernet loopback connector into the transceiver cable.
- 9 Initialize the server by pressing **CTRL/P** on your console terminal, or by unplugging the server power cord from the wall outlet and then reinserting it.
 - a. If the D2 LED continues to blink, the transceiver cable is faulty and must be replaced.
 - b. If the D2 LED glows steadily, the faulty unit is the device that the transceiver cable was connected to (the DELNI, the Etherjack extension, the DECOM, the DESTA, or the transceiver). Notify the server manager so that arrangements can be made for repair or for replacement of the faulty device.

5.5.6 No Messages on Console Terminal

The console terminal has no display when the server initializes.

Problem The port to which the console terminal is physically connected is not defined as the console port.

Correction Ensure the console terminal is physically connected to port 1 on the server.

Problem The console terminal is faulty.

Correction Replace the console terminal with another and set the device parameters as described at the beginning of Section 5.5.

Problem The internal characteristics for the console terminal are not set up correctly.

Correction Reset the internal characteristics for the console terminal as described at the beginning of Section 5.5.

NOTE

For server installation, the console terminal must be configured to operate with a speed of 9600 bits per second and with a character size of 8 bits with no parity.

5.6 D3 LED Blinking

If the D3 LED is blinking after power-up, it indicates the server has a down-line loading problem. To isolate and to diagnose the problem, do the following:

- 1 Connect a terminal to port 1 of the server, then power up the terminal.
- 2 Configure the terminal to operate with a speed of 9600 bits per second and a character size of 8 bits with no parity (refer to the specific terminal user's guide if you need help setting up the terminal parameters).
- 3 Press **CTRL/P** on the console terminal keyboard. Pressing **CTRL/P** restarts the server self-test and starts the down-line loading of the server image from a load host.
- 4 Read the message that appears on the terminal display.

The following order of 900-series messages on the console terminal indicate down-line loading problems. Each is covered in the following sections.

5.6.1 Down-line Load Starts, Then Fails

The following sequence of messages appears on the console terminal at various time intervals:

```
Local -902- Waiting for image load
Local -903- Loading from host host-address
Local -912- Load failure, timeout
```

Problem The host system (addressed in error message) failed to complete the down-line load to the server.

Correction Copy the error message exactly as it appears on the console terminal display and notify the server manager.

5.6.2 Down-line Load Does Not Start

The following sequence of messages appears on the console terminal at various time intervals:

```
Local -902- Waiting for image load
Local -912- Load failure, timeout
```

Problem Load host(s) not responding to server down-line load request within the allotted timeout period.

Correction Copy the error message exactly as it appears on the console terminal display and notify the server manager.

A

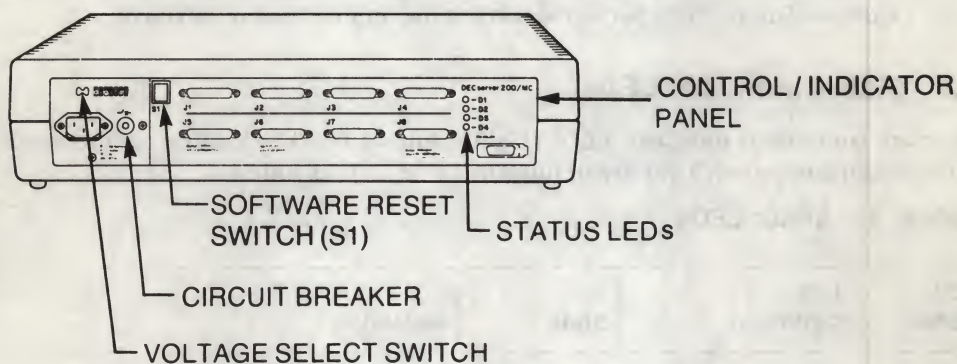
Controls and Indicators

Carlson and Anderson

This appendix describes the DECserver 200 controls and indicators. The descriptions and the locations apply to both models of the DECserver 200.

A.1 Controls

All the DECserver 200 controls are located on the server's control/indicator panel (see Figure A-1). There are no user controls inside the server.



LKG-0349

Figure A-1: Controls and Indicators

A.1.1 Software Reset Switch (S1)

The software reset switch (S1), located on the server's control/indicator panel, is used to restore factory-set characteristics to the server's permanent database. This switch is not used during the installation of the DECserver 200.

Refer to the *DECserver 200 Management Guide* for instructions on the use of this switch.

A.1.2 Voltage Select Switch

The voltage select switch is used to set the server input voltage to the range required for operation in your country. This switch was factory set for the correct power source for your country. Do not change this switch unless you are sure that the switch setting is incorrect (see your electrician if you are not sure). Section 4.2 provides information about changing the server voltage setting, if necessary.

A.1.3 Circuit Breaker

The circuit breaker provides overcurrent protection for the server. If an overcurrent condition within the server causes the circuit breaker to trip, the white center portion of the circuit breaker pops out as a visual indication, and the AC current is cut off from the server. The circuit breaker can be reset by pressing in on the white center portion of the breaker.

IMPORTANT

If the circuit breaker trips, do NOT attempt to reset it more than once. Contact Digital Field Service or return the unit to Digital for repair.

A.2 Status Indicator LEDs

There are four status indicator LEDs (Light Emitting Diodes) located on the server's control/indicator panel. They are defined in Table A-1, as follows:

Table A-1: Status LEDs

LED Name	LED Definition	State	Indication
D1	Power ON/OFF	ON	The server's dc voltages are correct
		OFF	The server's dc voltages are NOT correct
D2	Diagnostic	ON	Self-test passed
		OFF	Fatal error or test-in-progress
		Blinking	Nonfatal error
D3	Software	ON	Server image successfully loaded
		OFF	Down-line load in progress
		Blinking	Multiple-load failure
D4	Network activity	ON*	Indicates activity on the network

*Can be ON or OFF or flickering, depending on the amount of traffic on the network.

B

Port Devices Supported by DECserver 200

5

For Order supplied by OCT, page 200

This appendix lists port devices that are supported by DECserver 200. For the latest listing of supported devices, see the DECserver 200 Software Product Description that applies to your operating system.

Devices supported by DECserver 200 include:

- **Terminals** — DECserver 200 supports Digital and non-Digital terminals that generate both 7- and 8-bit characters.

Digital terminals supported by DECserver 200 include:

- LA12, LA100, and LA120
- LA34, LA36, and LA38
- VT50, VT52, VT5X and VT6X (in VT52 mode)
- VT100 series
- VT200 series
- GIGI

- **Personal Computers** — DECserver 200 supports Digital and non-Digital personal computers in either terminal emulation mode or in file transfer mode.

Digital personal computers supported by DECserver 200 include:

- VT180
- Professional 300 series
- Rainbow 100 series
- DECmate I, II, and III

Non-Digital personal computers supported by DECserver 200 include:

- IBM PC, IBM PC/XT, and IBM Personal Computer AT

- **Printers** — DECserver 200 supports Digital and non-Digital printers that use RS-232-C (EIA232) serial ports.

Digital printers supported by DECserver 200 include:

- LA50, LA100 (Letterprinter), LA180, and LA210
- LCP01 (Ink Jet Printer)
- LN01s*, LN03s* (Laser Printers)
- LQP02, LQP03 (Letter Quality Printers)
- LXY12-DA, LXY22-DA (Graphics Printers)

* With RS-232-C serial line option.

- **Modems** — DECserver 200/MC (Model DSRVB-Ax) provides full-duplex modem control and supports all asynchronous, full-duplex Digital modems, in both dial-in and dial-out modes.

Digital modems supported by DECserver 200 include:

- DF02 (300 bps)
- DF03 (300/1200 bps)
- DF112 (300/1200 bps)
- DF124 (1200/2400 bps)
- DF224 (300/600/1200/2400 bps)

Non-Digital modems supported by DECserver 200/MC include modems compatible with BELL 103J and BELL 212A, and modems that conform to CCITT V.21, V.21 bis, V.22, and V.22 bis.

C

Ordering Information

3

continued on next page

This appendix lists order codes for DECserver 200 related hardware products. See your Digital sales representative to purchase equipment.

For a listing of software options, see the DECserver 200 Software Product Description that applies to your operating system.

C.1 DECserver 200 Hardware Units

Description	Order Code
DECserver 200/MC	
120 Vac (includes DSRVB-KA country kit)	DSRVB-AA
240 Vac	DSRVB-AB
DECserver 200/DL	
120 Vac (includes DSRVB-KA country kit)	DSRVB-BA
240 Vac	DSRVB-BB

C.2 DECserver 200 Country Kits

Each kit includes a power cord, the documentation, an Ethernet loopback connector, and a rack mount kit. (You will need one kit for each DECserver 200.)

Country	Order Code
Australia	DSRVB-KZ
Belgium	DSRVB-LA
Canada (English and French)	DSRVB-KA
Denmark	DSRVB-KD
Finland	DSRVB-LA
France	DSRVB-LA
Germany	DSRVB-KG
Holland	DSRVB-LA
Italy	DSRVB-KI
India	DSRVB-LJ
Israel	DSRVB-KT
Japan	DSRVB-KJ
New Zealand	DSRVB-KZ

(continued on next page)

Country	Order Code
Norway	DSRVB-LA
Spain	DSRVB-LA
Sweden	DSRVB-LA
Switzerland (French and German)	DSRVB-LB
United Kingdom	DSRVB-KE
United States	DSRVB-KA

C.3 DECserver 200 Accessories

Description	Order code
Ethernet turnaround connector — For testing transceiver and transceiver cable.	H4080
Ethernet loopback connector — For loopback testing the DECserver 200 Ethernet port and transceiver cable.	12-22196-01
Port loopback connector — For loopback testing the DECserver 200/MC ports.	12-15336-08
36-pin loopback connector — For loopback testing the DECserver 200/DL 36-pin port connector, the BC16C/D cable, and other 36-pin components.	H3101
36-pin cable coupler	H3102
36-pin to 50-pin adapter	H3106
Etherjack kit — For covering and securing transceiver cable connections.	DEXJK
Wall/partition mounting bracket kit — For mounting the DECserver 200 to walls or office partitions.	H039
Rack mount kit — For mounting the DECserver 200 in standard rack cabinets.	H041-AA
DECserver 200/DL adapter kit — Includes one BC16C-10 cable, one H3104 cable concentrator, and one H3103 MMJ loopback connector.	H3104-B
DEC423 to RS-232-C active converter	H3105

C.4 DEC OFFICE Cable (BC16E) and Adapters

The following products are available to support the RS423 signaling used with the DECserver 200/DL, and to adapt from RS-232-C signaling:

Description	Order Code
10 ft terminated 6-conductor cable	BC16E-10
25 ft terminated 6-conductor cable	BC16E-25
50 ft terminated 6-conductor cable	BC16E-50
1000 ft terminated 6-conductor cable	BC16E-1000
MMJ loopback connector	H3103
Package of 50 MMPs	H8220
100 ft spool of unterminated 6-conductor cable	H8240
Crimping tool for 6-conductor cable	H8241
25-pin passive adapter	H8571-A
9-pin passive adapter	H8571-B
6-conductor cable coupler	H8572

C.5 Transceiver Cables

BNE3x-xx transceiver cable — Available in FEP versions, for use in return air conduits, and in PVC versions, for use in nonenvironmental airspaces. The large diameter of this cable results in a lower signal loss per length of cable than the smaller diameter office transceiver cable. Two styles of connectors are available: a straight connector and a right-angle connector.

The following cables are available:

- BNE3A-xx PVC, straight-connector transceiver cable
- BNE3B-xx PVC, right-angle connector transceiver cable
- BNE3C-xx FEP, straight-connector transceiver cable
- BNE3D-xx FEP, right-angle connector transceiver cable
- BNE3H-xx PVC, straight-connector, 802.3-compliant transceiver cable
- BNE3K-xx PVC, right-angle connector, 802.3-compliant transceiver cable
- BNE3L-xx FEP, straight-connector, 802.3-compliant transceiver cable
- BNE3M-xx FEP, right-angle connector, 802.3-compliant transceiver cable

The preceding cables are available in 5 meters (16.4 feet), 10 meters (32.8 feet), 20 meters (65.6 feet), and 40 meters (131.2 feet) lengths.

BNE4x-xx office transceiver cable — Available in PVC versions for use in nonenvironmental airspaces. The smaller diameter of this cable makes it ideal for use in office environments, however the smaller diameter of the cable also results in a cable signal loss that is four times greater than that of BNE3x-xx transceiver cables. Two styles of connectors are available: a straight connector and a right-angle connector.

The following cables are available:

- BNE4A-xx PVC, straight-connector transceiver cable
- BNE4B-xx PVC, right-angle connector transceiver cable
- BNE4C-xx PVC, straight-connector, 802.3-compliant transceiver cable
- BNE4D-xx PVC, right-angle connector, 802.3-compliant transceiver cable

The preceding cables are available in 2 meters (6.6 feet) and 5 meters (16.4 feet) lengths.

C.6 Device Cables

The following device cables are available:

PVC, shielded 36-conductor cable with one right-angle 36-pin D-connector and one straight 36-pin connector.

Length	Order Code
10 ft (3.0 m)	BC16C-10
25 ft (7.6 m)	BC16C-25
50 ft (15.2 m)	BC16C-50
100 ft (30.5 m)	BC16C-A0
250 ft (76.2 m)	BC16C-B5

PVC, shielded 36-conductor cable with two right-angle 36-pin D-connector.

Length	Order Code
10 ft (3.0 m)	BC16D-10
25 ft (7.6 m)	BC16D-25
50 ft (15.2 m)	BC16D-50
100 ft (30.5 m)	BC16D-A0
250 ft (76.2 m)	BC16D-B5

Null modem cable, round, 6-wire, fully shielded, EIA RS-232-C/CCITT V.28, female-to-female molded connectors

Length

Order Code

10 ft (3.0 m)	BC22D-10
25 ft (7.6 m)	BC22D-25
35 ft (10.7 m)	BC22D-35
50 ft (15.2 m)	BC22D-50
75 ft (22.9 m)	BC22D-75
100 ft (30.5 m)	BC22D-A0
150 ft (45.7 m)	BC22D-A5
200 ft (61.0 m)	BC22D-B0
250 ft (76.2 m)	BC22D-B5

Modem cable, round, 16-wire, fully shielded, EIA RS-232-C/CCITT V.28, male-to-female molded connectors

Length

Order Code

10 ft (3.0 m)	BC22E-10
25 ft (7.6 m)	BC22E-25
35 ft (10.7 m)	BC22E-35
50 ft (15.2 m)	BC22E-50
75 ft (22.9 m)	BC22E-75
100 ft (30.5 m)	BC22E-A0
150 ft (45.7 m)	BC22E-A5
200 ft (61.0 m)	BC22E-B0
250 ft (76.2 m)	BC22E-B5

Full modem cable, round, 25-wire, fully shielded, EIA RS-232-C/CCITT V.28, male-to-female molded connectors

Length

Order Code

10 ft (3.0 m)	BC22F-10
25 ft (7.6 m)	BC22F-25
35 ft (10.7 m)	BC22F-35
50 ft (15.2 m)	BC22F-50

(continued on next page)

Length

75 ft (22.9 m)

100 ft (30.5 m)

150 ft (45.7 m)

200 ft (61.0 m)

250 ft (76.2 m)

Order Code

BC22F-75

BC22F-A0

BC22F-A5

BC22F-B0

BC22F-B5

RS-232-C asynchronous, fully shielded null modem (host) cable**Length**

10 ft (3.0 m)

25 ft (7.6 m)

50 ft (15.2 m)

100 ft (30.5 m)

200 ft (61.0 m)

250 ft (76.2 m)

Order Code

BC22R-10

BC22R-25

BC22R-50

BC22R-A0

BC22R-B0

BC22R-B5

D

Cable Structure



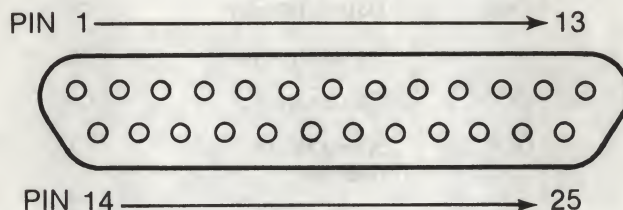
Chlorine

This appendix describes the electrical interface used on both models of the DECserver 200. Wiring diagrams of the individual device cables are provided for use in troubleshooting or for cable building. These cables can be ordered from Digital. See Appendix C for ordering information.

D.1 DECserver 200/MC Device Connectors (J1 through J8)

The control/indicator panel of the DECserver 200/MC (model DSRVB-Ax) contains a bank of eight 25-pin D-subconnectors (J1 through J8) used to connect devices to the server ports. Although all 25 pins are populated on each connector, only 11 pins are used (see Table D-1).

The pin numbers for these connectors, as viewed from the server's control/indicator panel, are shown in Figure D-1.



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Figure D-1: Pin Numbers — DECserver 200/MC Device Connectors (J1 through J8)

D.2 Serial Line Circuit Standards

DECserver 200/MC pin signals conform to the following serial line circuit standards (Ref: ISO 2110) shown in Table D-1.

Table D-1: Circuit Standards

Pin	Signal	Source	Description	(EIA232) RS-232-C	CCITT V.28
2	TXD	DTE	Transmitted Data	BA	103
3	RXD	DCE	Received Data	BB	104
4	RTS	DTE	Request to Send	CA	105
5	CTS	DCE	Clear to Send	CB	106
6	DSR	DCE	Data Set Ready	CC	107
7	GND	—	Signal Ground	AB	102
8	CD	DCE	Carrier Detect	CF	109
12	SMI	DCE	Speed Mode Indicate	CI	112
20	DTR	DTE	Data Terminal Ready	CD	108.2
22	RI	DCE	Ring Indicator	CE	125
23	DSRS	DTE	Data Signal Rate Select	CH	111

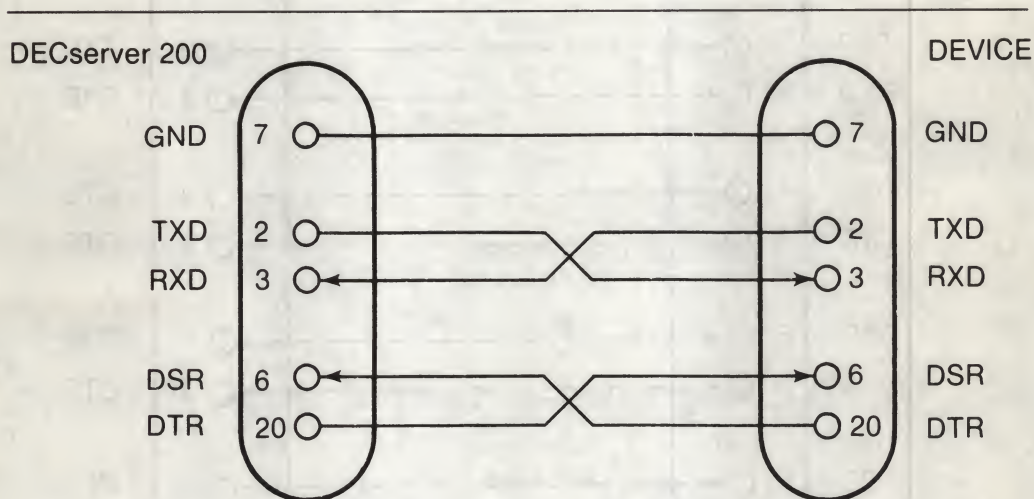
D.3 Device Cables Used With DECserver 200/MC

The cables described in the following sections are used with the DECserver 200/MC only.

D.3.1 BC22D Shielded Null Modem Cable (Data Leads Only)

The BC22D cable can be used to connect any device to the DECserver 200/MC when modem control is disabled in the software. This cable can also be used for devices that implement DTR/DSR flow control or power-off detection using the DSR signal.

Figure D-2 shows the pin numbers and signals used with the BC22D shielded null modem cable.



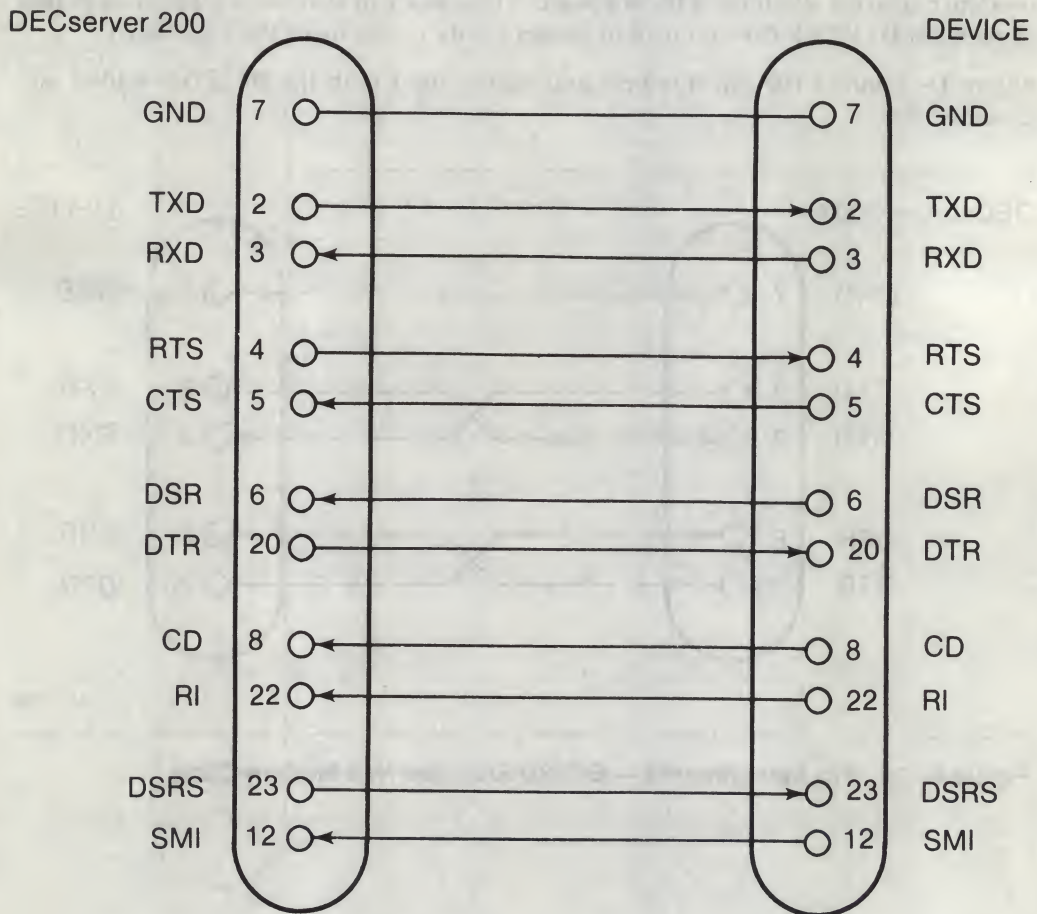
LKG-0352

Figure D-2: Pin Assignments — BC22D Shielded Null Modem Cable

D.3.2 BC22E or BC22F Shielded Straight-Through Cable (Full-Modem)

The BC22E or BC22F cable can be used for all normal connections to full-duplex modems when the DECserver 200/MC port is connected to a modem.

Figure D-3 shows the pin numbers and signals used with the BC22E or BC22F shielded straight-through cable.



LKG-0353

Figure D-3: Pin Assignments — BC22E or BC22F Shielded Straight-Through Cable

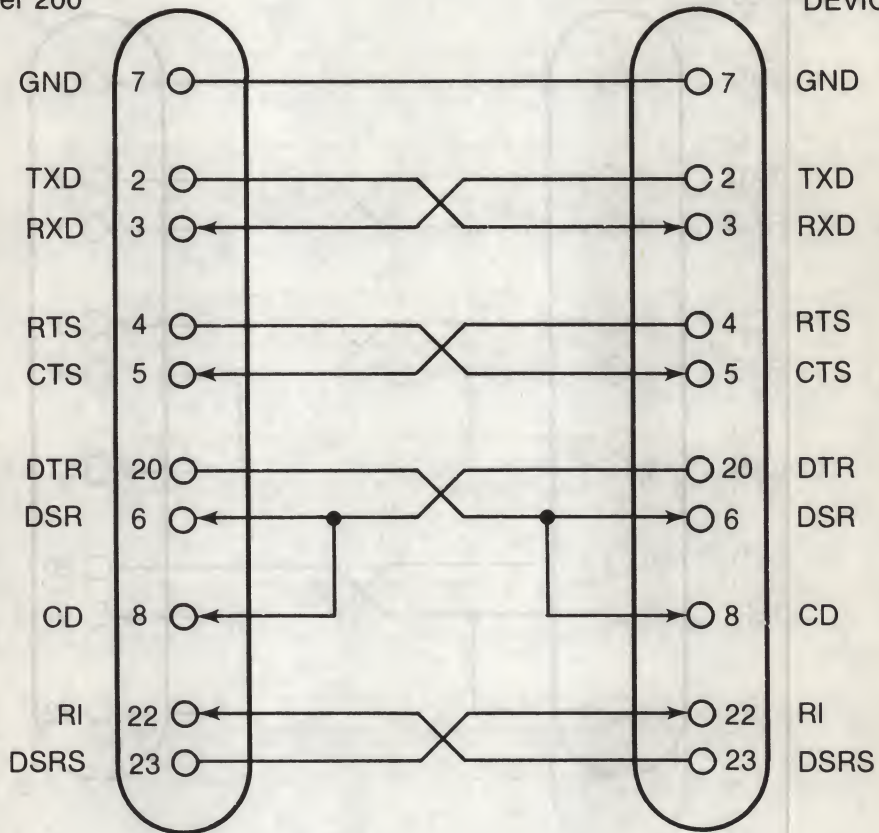
D.3.3 BC22R Shielded Null Modem Cable

The BC22R cable is recommended for connections to non-Digital host systems, devices using CTS/RTS flow control, and data switches that require simulation of RING (RI) and/or Carrier Detect (CD) signals.

Figure D-4 shows the pin numbers and signals that are used with the BC22R shielded null modem cable.

DECserver 200

DEVICE



LKG-0354

Figure D-4: Pin Assignments — BC22R Shielded Null Modem Cable

D.3.4 BC17D Shielded Null Modem Cable

The BC17D cable can also be used for connecting non-Digital host systems, terminals, and personal computers to the DECserver 200/MC. However, CTS/RTS flow control and RING enable functions are not supported.

Figure D-5 shows the pin numbers and signals that are used with the BC17D shielded null modem cable.

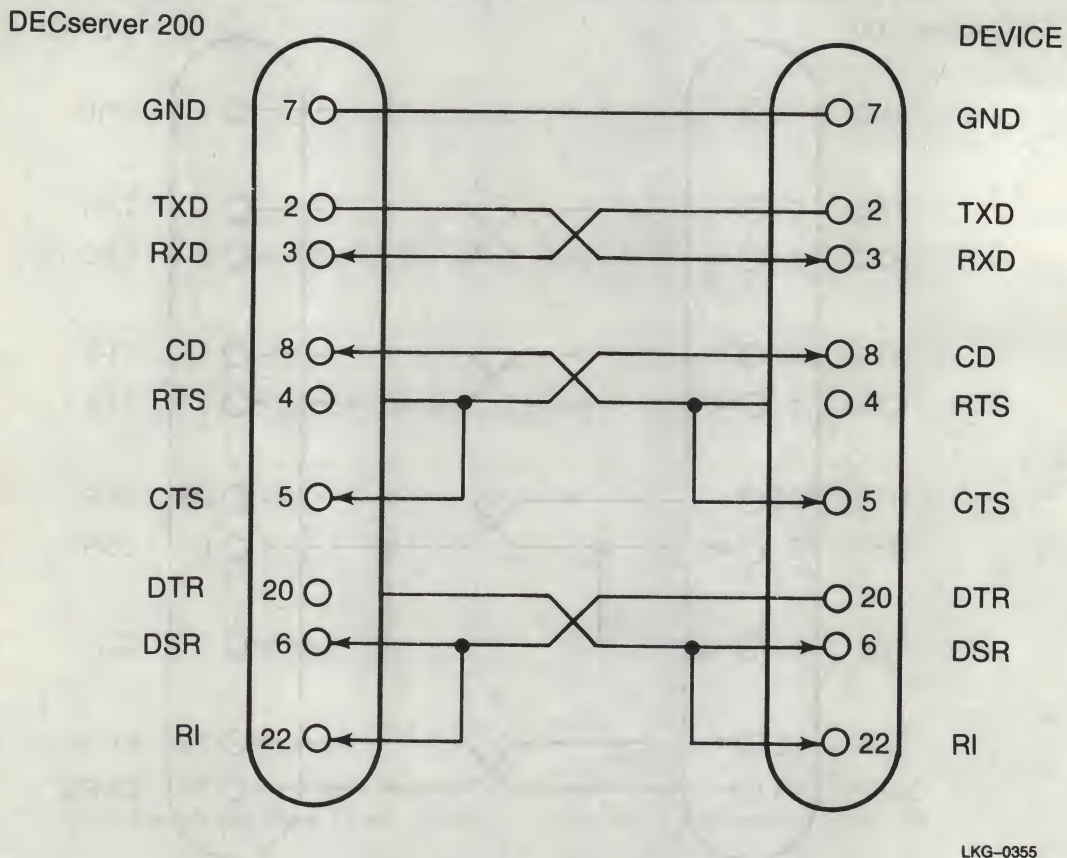


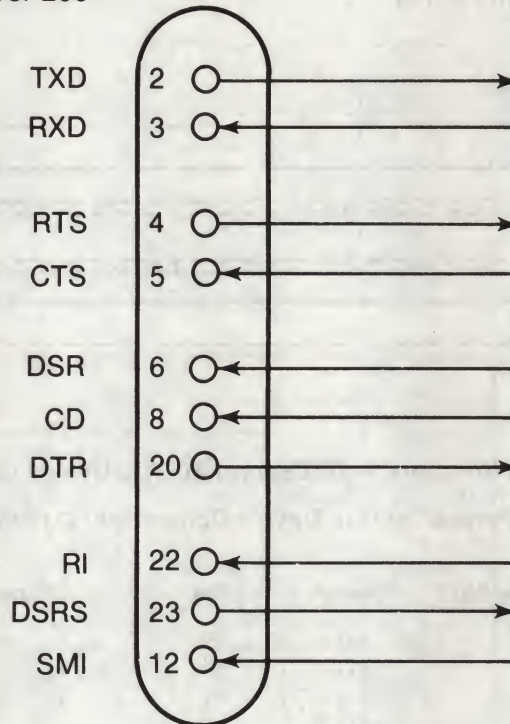
Figure D-5: Pin Assignments — BC17D Shielded Null Modem Cable

D.3.5 DECserver 200/MC Port Loopback Connector

The DECserver 200/MC port loopback connector is used to troubleshoot the DECserver 200/MC ports (as explained in the *DECserver 200 Management Guide*).

Figure D-6 shows the wiring diagram of the port loopback connector and the corresponding signals looped back to the server.

DECserver 200



LKG-0356

Figure D-6: Wiring Diagram — DECserver 200/MC Port Loopback Connector

D.4 DECserver 200/DL Device Connector (J1)

The DECserver 200/DL (model DSRVB-Bx) supports devices requiring data leads only for operation. This model provides a single 36-pin connector that contains data leads for eight channels that connect to the eight server ports. The electrical interface for this connector complies with RS423, DEC423, and V.10 specifications. Although all 36 pins are populated on this connector, only 32 pins are used (see Table D-2).

The pin numbers for these connectors, as viewed from the server's control/indicator panel, are shown in Figure D-7.

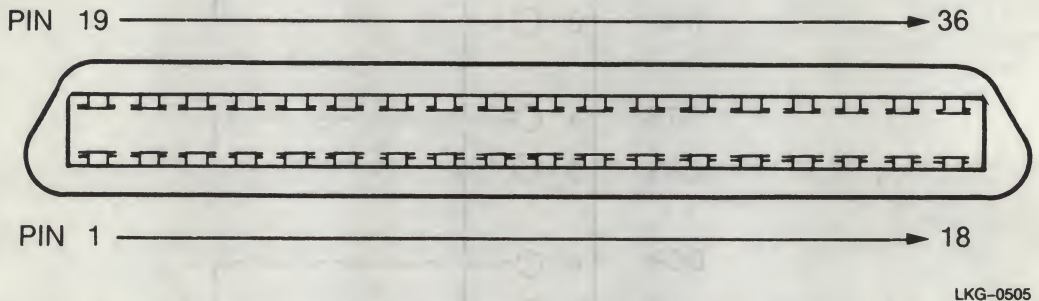


Figure D-7: Pin Numbers — DECserver 200/DL Device Connector (J1)

Table D-2: DECserver 200/DL Device Connector (J1) Pin Definitions

Pin	Channel	Signal	Pin	Channel	Signal
1	1	TXD +	19	1	TXD -
2	1	RXD +	20	1	RXD -
3	2	TXD +	21	2	TXD -
4	2	RXD +	22	2	RXD -
5	3	TXD +	23	3	TXD -
6	3	RXD +	24	3	RXD -
7	4	TXD +	25	4	TXD -
8	4	RXD +	26	4	RXD -
9	5	TXD +	27	5	TXD -
10	5	RXD +	28	5	RXD -
11	6	TXD +	29	6	TXD -
12	6	RXD +	30	6	RXD -
13	7	TXD +	31	7	TXD -
14	7	RXD +	32	7	RXD -
15	8	TXD +	33	8	TXD -
16	8	RXD +	34	8	RXD -
17	Spare		35	Spare	
18	Spare		36	Spare	

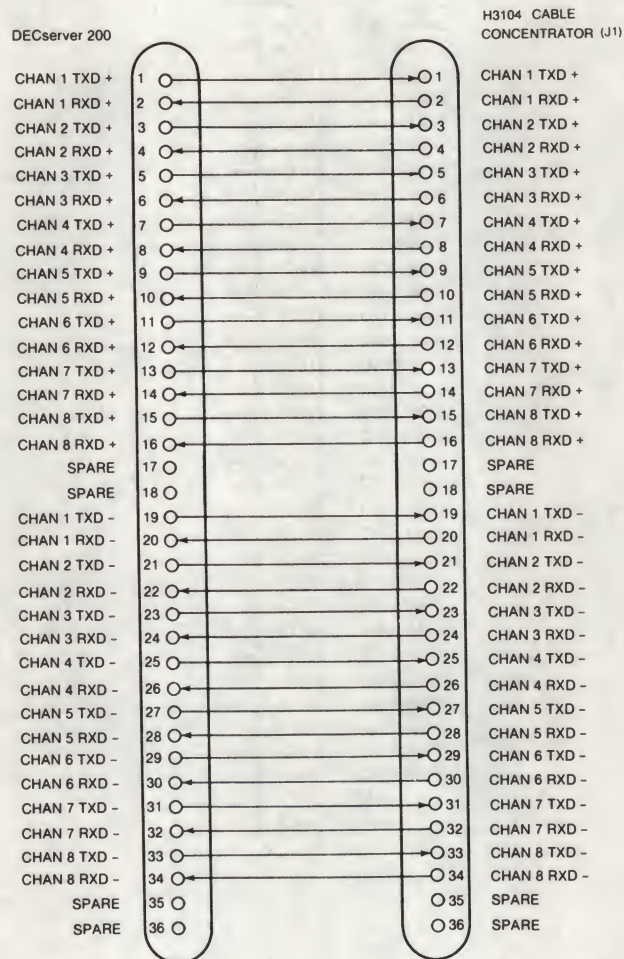
D.5 Device Cables and Adapters Used With DECserver 200/DL

The cables and adapters described in the following sections are used with the DECserver 200/DL only.

D.5.1 BC16C 36-Conductor Cable (Data Leads Only)

The BC16C cable is a straight-through 36-conductor cable that is used to connect the DECserver 200/DL ports (via J1) to the H3104 cable concentrator.

A wiring diagram of the BC16C cable is shown in Figure D-8.



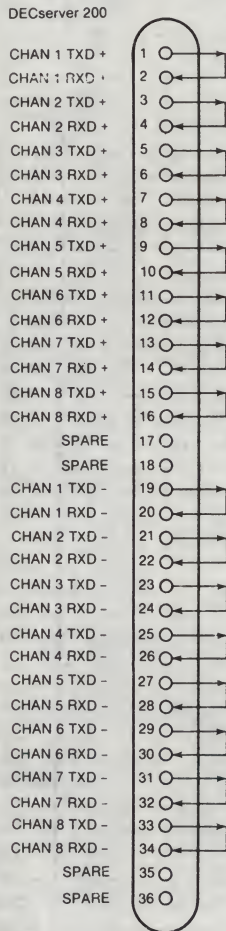
LKG-0506

Figure D-8: Wiring Diagram — BC16C 36-Conductor Cable

D.5.2 H3101 36-pin Loopback Connector

The H3101 loopback connector has one female 36-pin connector and one male 36-pin connector (only one used at a time). The connector is used to loopback test BC16C/D cable or any other 36-pin component used with the DECserver 200/DL.

A wiring diagram of the H3101 loopback connector is shown in Figure D-9.



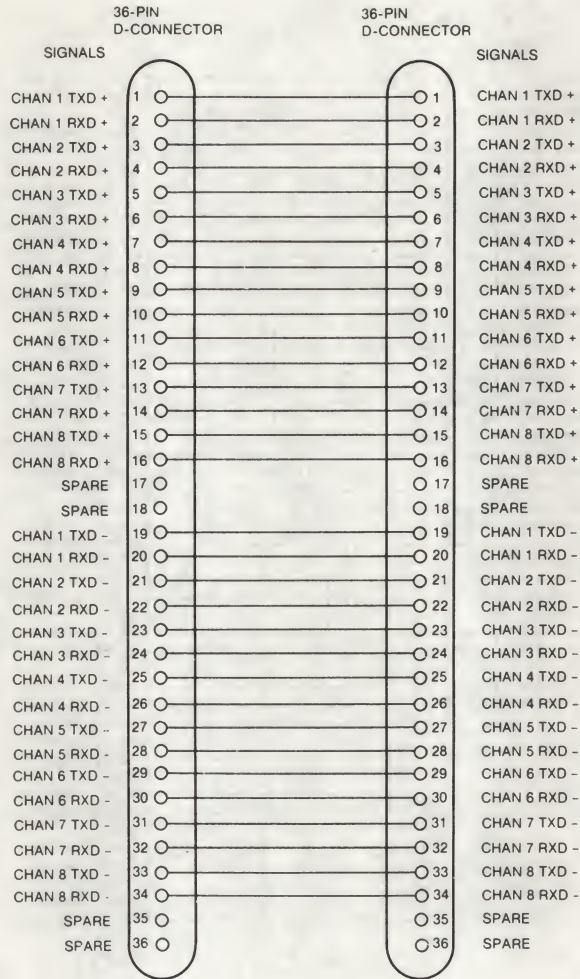
LKG-0507

Figure D-9: Wiring Diagram — H3101 Loopback Connector

D.5.3 H3102 36-pin Cable Coupler

The H3102 cable coupler is used to join two BC16C/D 36-conductor cables.

A wiring diagram of the H3102 cable coupler is shown in Figure D-10.



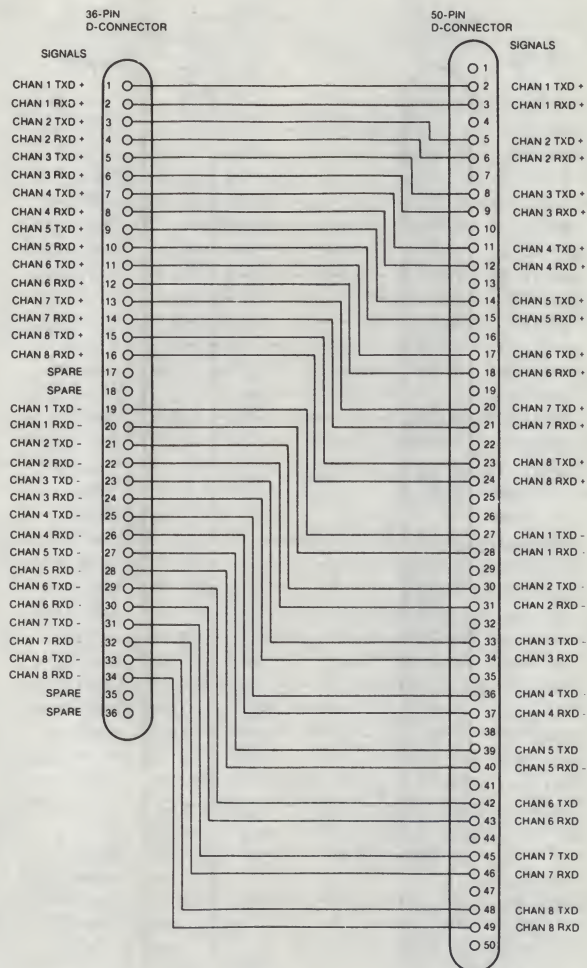
LKG-0508

Figure D-10: Wiring Diagram — H3102 36-Pin Cable Coupler

D.5.4 H3106 36-pin to 50-pin Adapter

The H3106 adapter is used to connect BC16C/D 36-conductor cables to 25-pair (50-conductor) trunk wiring. Both sides of the adapter are female connectors.

A wiring diagram of the H3106 cable adapter is shown in Figure D-11.



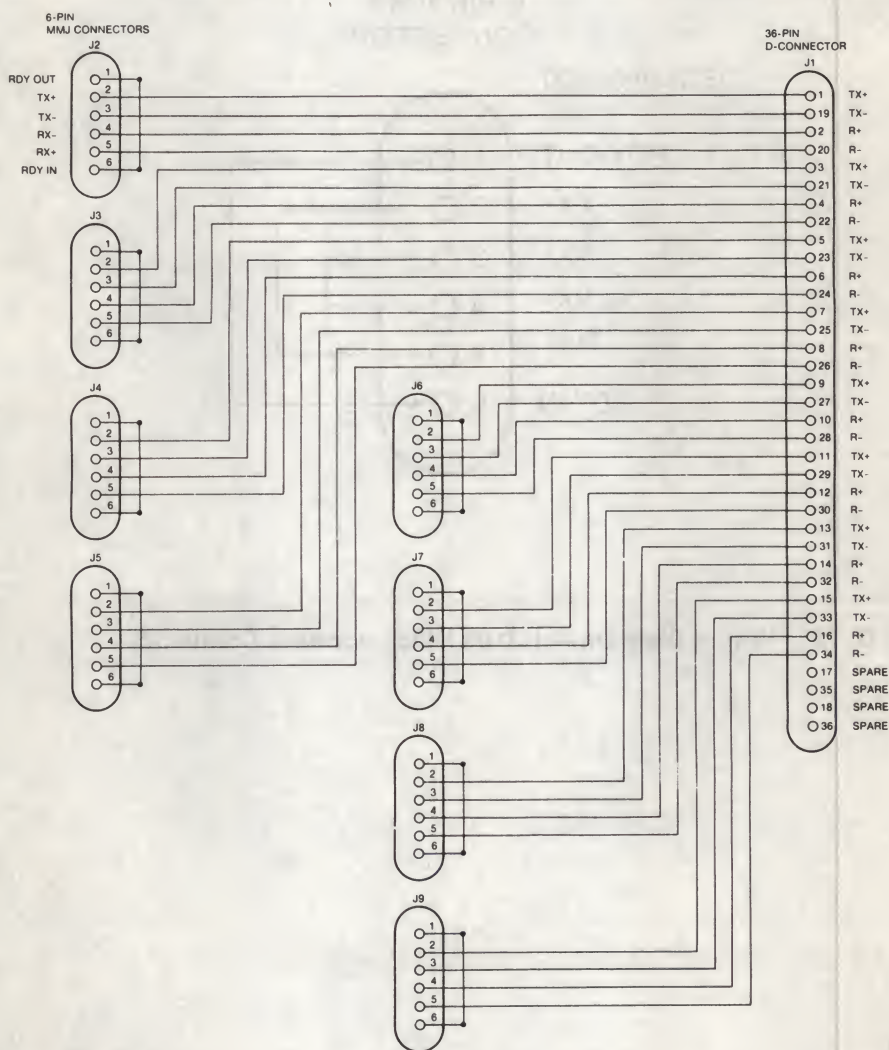
LKG-0509

Figure D-11: Wiring Diagram — H3106 Cable Adapter

D.5.5 H3104 Cable Concentrator

The H3104 cable concentrator has eight female 6-pin Modified Modular Jacks (MMJs) that accept BC16E-xx cables. These connections are physically converted into a single female 36-pin connection that accepts a BC16C/D 36-conductor cable. Note that the H3104 cable concentrator is only available as part of the H3104-B DECserver 200/DL adapter kit.

A wiring diagram of the cable concentrator is shown in Figure D-12.



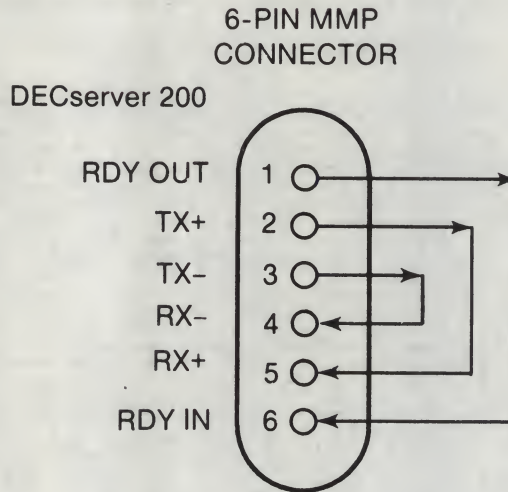
LKG-0510

Figure D-12: Wiring Diagram — H3104 Cable Concentrator

D.5.6 H3103 MMJ Loopback Connector

The H3103 MMJ loopback connector is used to loopback signals from the H3104 cable concentrator.

A wiring diagram of the MMJ loopback connector is shown in Figure D-13.



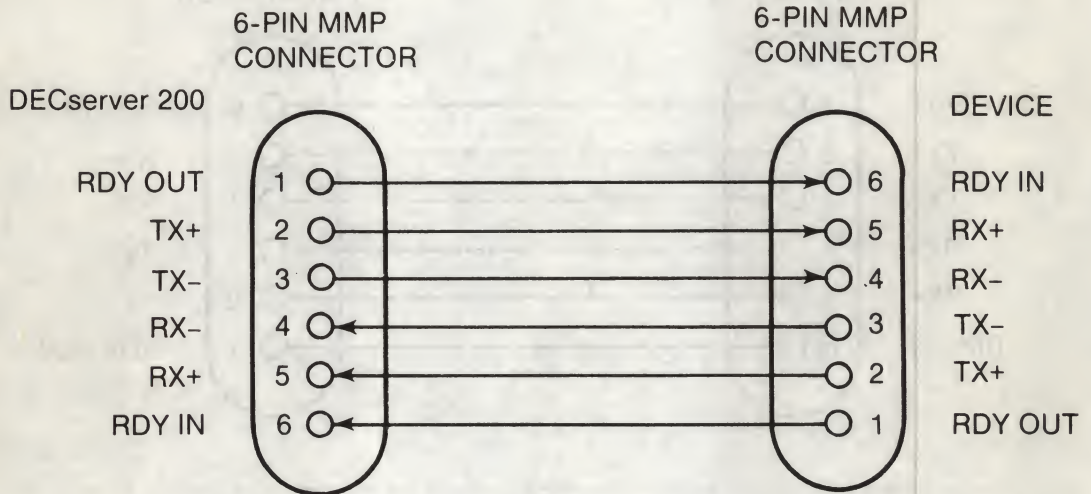
LKG-0442

Figure D-13: Wiring Diagram — H3103 MMJ Loopback Connector

D.5.7 BC16E-xx 6-Conductor DEC OFFICE Cable

The BC16E is an unshielded 6-conductor flat cable. This cable is terminated at both ends with a Modified Modular Plug (MMP).

A wiring diagram of the BC16E-xx cable is shown in Figure D-14.



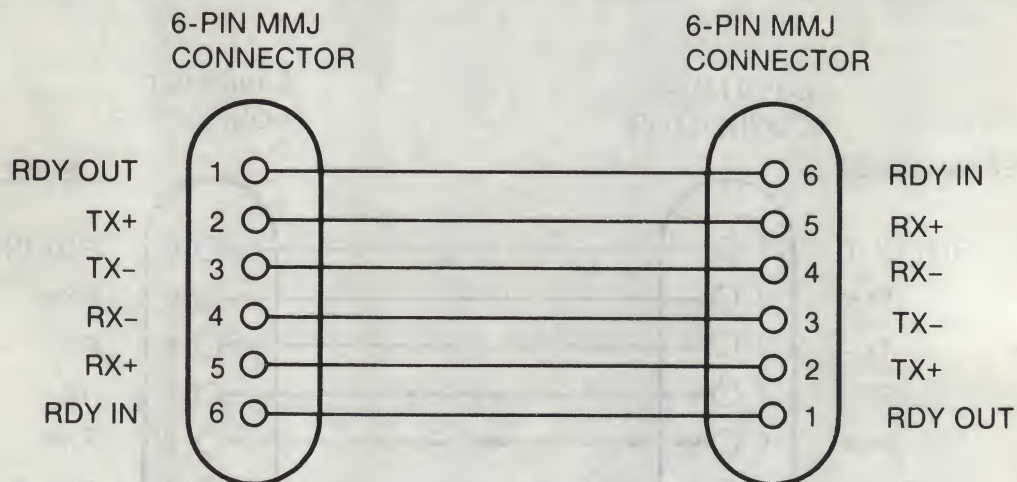
LKG-0447

Figure D-14: Wiring Diagram — BC16E-xx Cable

D.5.8 H8572 6-Pin Cable Coupler

The H8572 cable coupler is used to join two BC16E-xx DEC OFFICE cables. The coupler consists of two back-to-back Modified Modular Jacks (MMJs).

A wiring diagram of the H8572 cable coupler is shown in Figure D-15.



LKG-0512

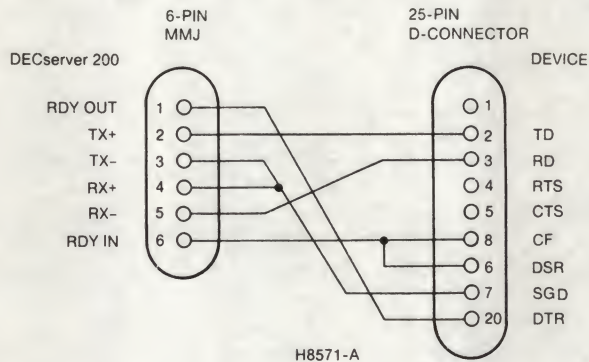
Figure D-15: Wiring Diagram — H8572 Cable Coupler

D.5.9 H8571-xx DEC423 to RS-232-C Passive Adapters

The H8571 adapters are used to adapt 25-pin and 9-pin D-connectors to Modified Modular Jacks (MMJs). Each adapter provides a modified modular jack on one side and a female D-connector on the other side. Two models of the adapter are available:

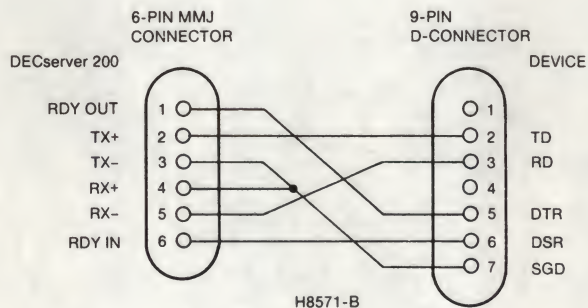
- H8571-A — Used with 25-pin D-connectors found on terminals
- H8571-B — Used with 9-pin D-connectors found on some printers and on some terminal printer ports

Figures D-16 and D-17 show the wiring diagrams for both models of the H8571 adapters.



LKG-0511

Figure D-16: Wiring Diagram — H8571-A Adapter



LKG-0446

Figure D-17: Wiring Diagram — H8571-B Adapter

E

DECserver 200 Specifications

This appendix lists the DECserver 200 specifications. These specifications apply to both models of the DECserver 200 (models DSRVB-Ax and DSRVB-Bx).

E.1 Power

The power requirements for the DECserver 200 are shown in Table E-1.

Table E-1: DECserver 200 Power Ratings

Requirements	DSRVB-AA DSRVB-BA	DSRVB-AB DSRVB-BB
Factory-set nominal voltage	100 to 120 Vac 3-wire, single phase	220 to 240 Vac 1N + PE
Frequency	47 to 63 Hz	47 to 63 Hz
Line current	1.0 A	0.5 A
Power	75 watts	75 watts

Most wall outlets meet one of these sets of requirements. However, you should check with an electrician to make sure the line is grounded (earthed).

E.2 Environment

E.2.1 Temperature

Operating: 5° to 50°C (41° to 122°F)

Nonoperating: -40° to 66°C (-40° to 151°F)

Maximum temperature change per hour: 20°C (36°F)

Rapid temperature changes can affect operation. Therefore, do not operate the server near heating or cooling devices, large windows, or doors that open to the outside.

IMPORTANT

The server must be at operating temperature before you install it. If, during transit, the server is exposed to temperatures above or below the operating temperature, leave the server overnight in the operating environment before operating it.

E.2.2 Altitude

Operating: 2.4 km (8000 ft)

Nonoperating: 9.1 km (30,000 ft)

If you are operating the server above 2.4 kilometers, decrease the operating temperature by 1.8°Centigrade/1000 meters (1° Fahrenheit/1000 feet).

E.2.3 Relative Humidity

Operating: 10% to 95% (noncondensing)

Nonoperating: 95% maximum

Low humidity can cause static electricity that can affect server operation. Use a humidifier to correct the problem.

E.2.4 Physical Size of the DECserver 200

Width: 49.3 cm (19.4 in)

Height: 11.7 cm (4.6 in)

Depth: 31.2 cm (12.3 in)

Weight: 5.9 kg (13.0 lb)

E.2.5 Space Requirements

Allow for 15 centimeters (6 inches) of airspace around the server air vents, and place the server at least 45 centimeters (18 inches) above the floor. This allows adequate ventilation for cooling fans and reduces exposure to excess dust from foot traffic.

F

Service Options

7

2000-01-01

This appendix briefly describes the Digital hardware and software service options that are available to support the DECserver 200. For more information about Digital services, please contact your Digital sales representative.

F.1 Hardware Services

F.1.1 Digital On-Site Service

Digital provides on-site service under a service agreement or on a per-call basis. Trained service specialists perform hardware maintenance at your site.

F.1.2 DECmailer

DECmailer allows you to ship the server to a Customer Return Center for repair.

F.2 Installation Service

Installation service includes services provided by trained service specialists for successful installation of your DECserver 200.

F.3 Software Services

F.3.1 Software Product Service Agreements

Digital offers software product service agreements to support your software. See your Digital sales representative for more details.

F.3.2 Training

Digital Educational Services sells training for installation, maintenance, and management of Digital software. Course formats may vary from seminars to packaged training materials.

1. The first step in the process of identifying a problem is to define the problem clearly. This involves identifying the symptoms of the problem and determining the scope of the problem. Once the problem has been defined, the next step is to identify the causes of the problem. This involves identifying the factors that are contributing to the problem and determining the relationships between these factors. Once the causes of the problem have been identified, the next step is to develop a plan of action to address the problem. This involves identifying the steps that need to be taken to solve the problem and determining the resources that will be needed to implement the plan. Once a plan of action has been developed, the next step is to implement the plan. This involves carrying out the steps that have been identified in the plan and monitoring the progress of the implementation. Finally, the last step in the process is to evaluate the results of the implementation. This involves determining whether the problem has been solved and whether the resources have been used effectively.

2.1. Problem Definition

2.1.1. Problem Statement

The problem statement is a clear and concise description of the problem that is being addressed. It should identify the symptoms of the problem and the scope of the problem. The problem statement should be written in a way that is easy to understand and that is specific enough to allow for the development of a plan of action.

2.1.2. Problem Analysis

The problem analysis is a detailed examination of the problem that is being addressed. It involves identifying the causes of the problem and determining the relationships between these causes. The problem analysis should be written in a way that is easy to understand and that is specific enough to allow for the development of a plan of action.

2.2. Plan Development

The plan development is the process of developing a plan of action to address the problem. It involves identifying the steps that need to be taken to solve the problem and determining the resources that will be needed to implement the plan. The plan should be written in a way that is easy to understand and that is specific enough to allow for the implementation of the plan.

2.3. Plan Implementation

2.3.1. Implementation Steps

The implementation steps are the specific actions that need to be taken to implement the plan. They should be written in a way that is easy to understand and that is specific enough to allow for the implementation of the plan. The implementation steps should be written in a way that is easy to understand and that is specific enough to allow for the implementation of the plan.

2.3.2. Implementation Resources

The implementation resources are the resources that are needed to implement the plan. They should be identified in a way that is easy to understand and that is specific enough to allow for the implementation of the plan. The implementation resources should be identified in a way that is easy to understand and that is specific enough to allow for the implementation of the plan.

G

Connecting to Etherjack

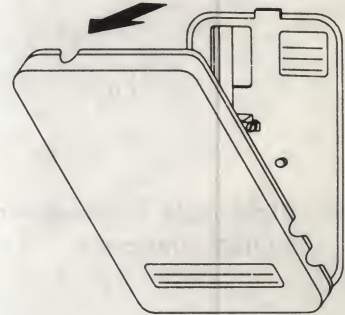


Connecting to Ethernet

This appendix explains how to connect the server transceiver cable to another transceiver cable mounted in an Etherjack junction box. If the Etherjack junction box has not been installed, install it now before continuing with this procedure. Follow the installation instructions you received with the unit.

To connect your server transceiver cable to the Etherjack junction box, proceed as follows:

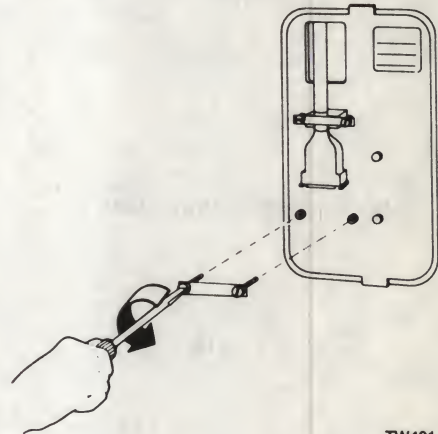
- 1 Remove the Etherjack cover by lifting the top of the cover slightly, then pulling it back.



TW391

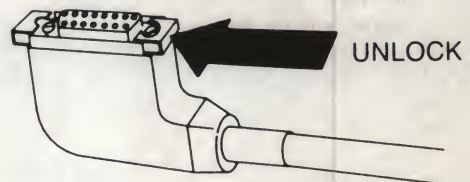
- 2 Using a flat-blade screwdriver, remove the 2 screws securing the larger retainer bracket, and remove the bracket.

The transceiver cable mounted inside can have a straight or a right-angle connector.



TW401

- 3 Unlock the slide latch on the server transceiver cable.

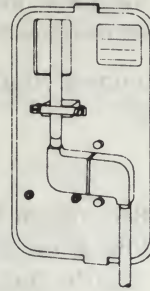


TW392

-
- 4 Connect the server transceiver cable to the Etherjack transceiver cable. Note the four possible combinations of straight and right-angle connectors:

Both right-angle connectors

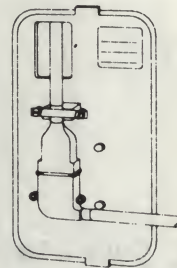
OR



TW393

Right-angle connector to straight connector

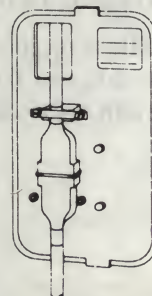
OR



TW394

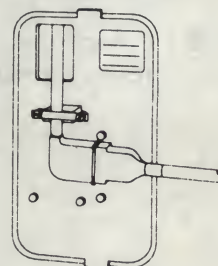
Both straight connectors

OR



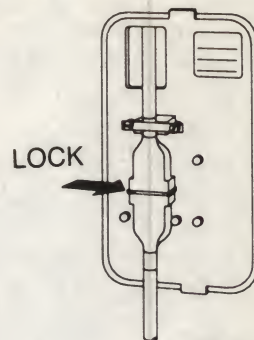
TW395

Straight connector to right-angle connector



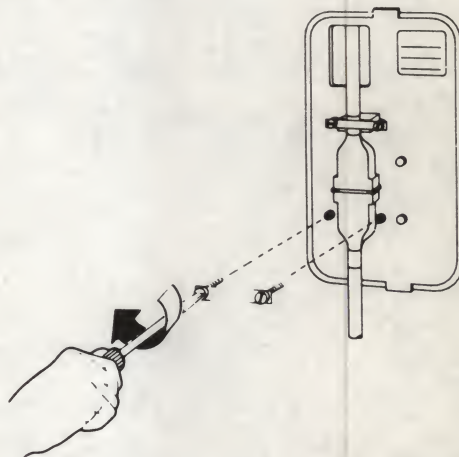
TW396

-
- 5 Push the slide latch on the server transceiver cable connector until the connectors are locked securely.



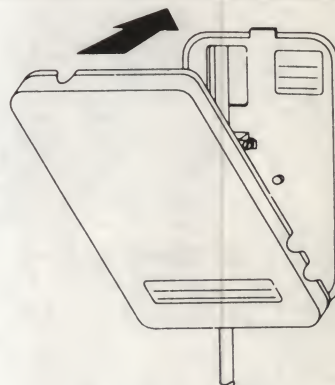
TW397

-
- 6 Replace the large retainer bracket and the 2 screws. Tighten the 2 screws with the flat-blade screwdriver.



TW400

-
- 7 Replace the Etherjack cover, ensuring the cables protrude through the slots provided in the cover. Push the top of the cover over the tab in the backplate until it locks in place.



TW398

1. The first part of the paper
is devoted to a general
discussion of the problem
of the existence of solutions
of the system of equations

2. In the second part
we shall consider the case
of a linear system of equations
with constant coefficients

3. The third part of the paper
is devoted to a study of the
properties of the solutions of the
system of equations with
variable coefficients

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